THE METROPOLITAN DISTRICT
HARTFORD COUNTY, CONNECTICUT

PROJECT MANUAL
FOR

MAPLE AVENUE
SANITARY SEWER REPLACEMENT & REHABILITATION
WINDSOR, CONNECTICUT

CONTRACT NO. 2013-04

BID DATE: April 5, 2013

MDC

DIVISION 0
BIDDING AND CONTRACT REQUIREMENTS

THE METROPOLITAN DISTRICT

MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION
WINDSOR, CONNECTICUT

CONTRACT NUMBER 2013-04

INVITATION TO BID

Sealed Bids for construction of **Contract Number 2013-04: Maple Avenue Sanitary Sewer Replacement and Rehabilitation Project** will be received by **The Metropolitan District**, at the office of the **District Clerk of the Metropolitan District, 555 Main Street, P.O. Box 800, Hartford, CT, 06142-0800 until 2:00 PM (Local Time), April 5, 2013** and at that time and place bids will be publicly opened and read aloud.

The Work shall consist of all labor, equipment, fees, permits, and other related costs necessary to provide for The Work shall include 1,425 linear feet of new 8-inch PVC sewer main to replace existing 8-inch styrene rubber plastic pipe; approximately 1,600 linear feet of sewer service lateral replacement within the public right-of-way; 4 new Type II sewer manholes of approximately 32 vertical feet; installation of approximately 245 linear feet of cured-in-place lining in existing 8" vitrified clay sewer main pipe; installation of approximately 415 linear feet of cured-in-place lining in existing 10" vitrified clay sewer main pipe; point repairs to an existing 8 inch sewer main; point repairs to an existing 10 inch sewer main; 1 new storm manhole; 2 new catch basins; 250 linear feet of 15" reinforced concrete pipe; 30 linear feet of 18" reinforced concrete pipe; removal of 700 tons of contaminated and 850 tons of polluted excavated soil. The Work includes all associated earthwork, fill materials, dewatering and drainage, maintenance of sewer and drainage flow, connections existing sewer and drain pipe and structures, pre- and post-construction television inspection, temporary and permanent paved surface restoration, surface restoration, traffic management and control during construction, environmental protection measures and all miscellaneous work and cleanup necessary to complete the project. Bidders are directed to Section 01010 Summary of Work for specific details. The Work shall be located in the Town of Windsor in the State of Connecticut as shown on the Drawings and specified herein.

Contract documents may be examined and/or obtained from the Metropolitan District's electronic procurement bidding system located at www.ebidexchange.com/mdc. Prospective bidders are required to register on the Metropolitan District's electronic procurement bidding system; once registered, prospective bidders can download the bid package from the web site.

Each Bid shall be submitted in accordance with the Instructions to Bidders and shall be accompanied by a Bid Security in the amount of 10 percent of the Bid.

Bidders may not withdraw their Bids for a period of **One Hundred and Twenty (120)** days, excluding Saturdays, Sundays, and legal holidays after the actual date of the opening of the Bids.

The Successful Bidder must furnish a 100 percent Performance Bond and a 100 percent Payment Bond with a surety company acceptable to the Owner.

The Successful Bidder will be required to submit all copies of the Agreement and all other applicable Contract Documents within **Ten (10) days** of the Notice of Award as outlined in the Contract Document.

The Contractor, and any Subcontractors performing work with a subcontract value of $500,000 or greater, shall hold a current **DAS Contractor Prequalification Certificate** from the Department of Administrative Services of the State of Connecticut according to C.G.S§ 4a-100, C.G.S. §4b-101 and C.G.S.§4b-91. Bidders shall submit with their bids a DAS Contractor Prequalification Certificate along with a current Update (Bid) Statement. Any bid submitted without a copy of the DAS Prequalification Certificate and an Update (Bid) Statement shall be invalid. Prior to the commencement of any portion of the Work by a Subcontractor whose subcontract value is equal to or greater than $500,000, the Contractor shall

provide to the Owner a current DAS Contractor Prequalification Certificate for such Subcontractor along with an Update (Bid) Statement. Bidders do not need to include subcontractor certificates with their bids, but must have them at the time they commence work on the Project.

Complete instructions for filing Bids are included in the Instructions to Bidders.

This Project and the Work performed thereon is subject to the prevailing wage laws of the State of Connecticut. Copies of the current prevailing wage determination issued by the Connecticut Department of Labor are attached to this Invitation to Bid. The acceptance by the Bidder of these wage determinations is a condition of any award of the Contract. By submitting a Bid for this Project, the Bidder is deemed to have accepted such wage determinations. The Owner reserves the right to waive any informality or to reject any or all Bids if deemed to be in its best interest.

This contract is subject to a Small Local Business Enterprise (SLBE) set-aside of 20% of the total contract value. For further information, please read Article 21 in the Instructions to Bidders.

Bidders on this work will be required to comply with the President's and State of Connecticut Executive Order No. 11246, 3, 17, 16 and any amendments or supplements to those Executive Orders.

Bidders shall certify that they do not, and will not, maintain or provide for their employees any facility that is segregated on a basis of race, color, creed, or national origin.

Bidders shall comply with Title VI of the Civil Rights Act of 1964, the Anti-Kickback Act, and the Contract Work Hours Standards Act.

All Bidders are requested to note that the award of this contract is subject to the following conditions and contingencies:

1. The approval of such governmental agencies as may be required by law.
2. The appropriation of adequate funds, by the proper agencies

A mandatory pre-bid conference will be held for potential bidders at 2:00 PM on March 20, 2013 at the MDC Construction Inspection Facility, 231 Brainard Road, Hartford, CT - Side Conference Room. Prospective bidders must attend this conference. All prospective bidders are invited to ask questions to the District and/or the District's Agent(s) during this conference.

Kristine Shaw
District Clerk

THE METROPOLITAN DISTRICT

MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION

CONTRACT NUMBER 2013-04

INSTRUCTIONS TO BIDDERS

ARTICLE 1. QUALIFICATIONS OF BIDDERS

1.1 Bidders may be investigated by Owner to determine if they are qualified to perform the Work. All Bidders shall be prepared to submit within **ten (10) days** of Owner's or Engineer's request, written evidence of such information and data necessary to make this determination.

1.2 The investigation of a Bidder will seek to determine whether the organization is adequate in size, is authorized to do business in the jurisdiction where the project is located, has had previous experience and whether available equipment and financial resources are adequate to assure Owner that the Work will be completed in accordance with the terms of the Agreement. The amount of other work to which the Bidder is committed may also be considered.

1.3 In evaluating Bids, Owner will consider the qualifications of only those Bidders whose Bids are in compliance with the prescribed requirements.

1.4 Owner reserves the right to reject any Bid if the evidence submitted by, or the investigation of, such Bidder fails to satisfy Owner that such Bidder is properly qualified to carry out the obligations of the Contract Documents and to complete the Work contemplated therein. The Owner further reserves the right to waive any informality in or to reject any or all Bids if deemed to be in the Owner’s best interest.

1.5 The Contractor, and any Subcontractors performing work with a subcontract value of $500,000 or greater, shall hold a current DAS Contractor Prequalification Certificate from the Department of Administrative Services of the State of Connecticut according to C.G.S§ 4a-100, C.G.S. §4b-101 and C.G.S.§4b-91. Bidders shall submit with their bids a DAS Contractor Prequalification Certificate along with a current Update (Bid) Statement. Any bid submitted without a copy of the DAS Prequalification Certificate and an Update (Bid) Statement shall be invalid. It should be noted that the Contractor and any Subcontractors holding a DAS Prequalification Certificate will be evaluated under this Contract in accordance with DAS performance evaluation requirements.

1.6 Each Bidder will include with the Bid Submission a list of subcontractors, their qualifications, and licensees as required by Section 00485, 00485B, and 00485C herein. The list will include: subcontractor’s name, legal address, amount of proposed

subcontract, and specification section qualifications and required licensees to perform the required work. Bidders will provide this information for all subcontractors with their bids whose subcontracts equal or exceed $25,000.00.

1.7 The Contractor shall perform a minimum of 25% of the contract work with its own forces.

ARTICLE 2. COPIES OF CONTRACT DOCUMENTS

2.1 Complete sets of Contract Documents shall be used in preparing Bids; neither Owner nor Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents.

2.2 Owner and Engineer in making copies of Contract Documents available do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

ARTICLE 3. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

3.1 Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may in any manner affect cost, progress or performance of the Work, (c) become familiar with Federal, State and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (d) study and carefully correlate Bidder's observations with the requirements of the Contract Documents.

3.2 Before submitting a Bid, Bidders may, at their own expense, make such investigations and tests as they may deem necessary to determine their Bid for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

3.3 On request, Owner will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for the submission of a Bid.

3.4 The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Supplementary Conditions, General Requirements or on the Drawings.

3.5 The submission of a Bid will constitute an incontrovertible representation that the Bidder has complied with every requirement of this Article 3 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

ARTICLE 4. INTERPRETATIONS

4.1 All questions about the meaning or intent of the Contract Documents shall be received in writing by the Owner, (hardcopy, fax or email) by the Owner, no later than 4:00 PM on Tuesday, March 26, 2013 Direct all inquiries to Carla Gold, Metropolitan District, 555 Main Street, Hartford, CT 06142-0800 between the hours of 8:00 a.m. to 4:00 p.m., Monday through Friday, except holidays, via email at cgold@themdc.com.

The Owner is not responsible for any questions not received by the date and time required. The Owner will neither approve nor disapprove particular products or methods prior to the opening of the bids; such products or methods will be considered when offered by the successful Bidder for incorporation into the work.

4.2 Written clarifications or interpretations will be issued by Addenda not later than five business days before the bid opening date. Only questions answered by formal written Addenda will be binding. Oral and other clarifications or interpretations will be without legal effect. Addenda and all supporting documents will be posted on the MDC ebid exchange website (www.ebidexchange.com/mdc) to allow bidders to download addenda.

4.3 Bidders are responsible for determining that they have received all Addenda issued.

4.4 Questions concerning bid submittal, bonding, etc. should be referred to the District's Contract Specialist at telephone 860-278-7850, Ext. 3344 between the hours of 9:00 a.m. to 3:00 p.m., Monday through Friday, except holidays.

ARTICLE 5. PRE-BID CONFERENCE

5.1 A mandatory pre-bid conference will be held for potential bidders at 2:00 p.m. on March 20, 2013 at the MDC Construction Inspection Office, 231 Brainard Road – Side Conference Room. Prospective bidders must attend this conference. All prospective bidders are invited to ask questions to the District and/or the District's Agent(s) during this conference.

ARTICLE 6. BID SECURITY

6.1 Each Bid must be accompanied by cash, bid bond, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to Owner. Bid bonds must be issued by a surety licensed in Connecticut and listed on the Department of Treasury's Listing of Approved Sureties with an underwriting limitation of no less than the full amount of the bid. The Bid Security shall be in the amount EQUAL TO TEN PERCENT (10%) of the amount of the bid. Bid Security shall be sealed in a separate envelope from the Bid and then attached to the envelope containing the Bid. All Bid Securities except those of the three lowest responsible and eligible Bidders will be returned within ten days, Saturdays, Sundays, and legal holidays excluded, after opening of the Bids. All Bid Securities will be returned on the execution of the Agreement or if no award is made, within **ONE HUNDRED AND TWENTY (120)**

days, excluding Saturdays, Sundays and legal holidays after the actual date of opening of the Bids, unless forfeited under the conditions herein stipulated.

6.2 In case a party to whom a Contract is awarded shall fail or neglect to execute the Agreement and furnish the satisfactory bonds within the time specified, Owner may determine that the Bidder has abandoned the Contract, and thereupon the Bid Forms and acceptance shall be null and void and the Bid Security accompanying the Bid Form shall be forfeited to Owner as liquidated damages for such failure or neglect and to indemnify said Owner for any loss which may be sustained by failure of the Bidder to execute the Agreement and furnish the bonds as aforesaid, provided that the amount forfeited to Owner shall not exceed the difference between the Bid Price of said Bidder and that of the next lowest responsible and eligible bidder and provided further that, in case of death, disability, or other unforeseen circumstances affecting the Bidder, such Bid Security may be returned to the Bidder. After execution of the Agreement and acceptance of the bonds by Owner, the Bid Security accompanying the Bid Form of the Successful Bidder will be returned.

ARTICLE 7. PERFORMANCE, PAYMENT AND OTHER BONDS

7.1 Performance, Payment and other Bonds shall be provided in accordance with Article 5 of the Conditions of the Contract.

7.2 All Bonds required as Contract Security shall be furnished with the executed Agreement.

ARTICLE 8. BID FORM

8.1 Each bid shall be completed on the Proposal, Document 00300, which shall be unchanged except for the insertion of names, addresses, prices and other required data in the spaces provided on the Proposal form. All blank spaces for Bid prices must be filled in with the unit price for the item or the lump sum for which the Bid is made. Bidders shall also complete and submit the following documents:

a. Bid Bond (Section 00410)
b. Bidder Qualification Form (Section 00420)
c. Affidavit of Non-Collusion and Independent Price Determination (Section 00430)
d. Certificate of Corporate Authority (Section 00440)
e. OSHA Compliance History Certification (Section 00445)
f. Fair Employment Practices Qualification Form (Section 00450)
g. Letter re: Performance and Payment Bonds (Section 00460)
h. MDC Contractor Safety Program Questionnaire (Section 00470)
i. Small Local Business Enterprise (SLBE) Forms (Section 00482)

j. List of Subcontractors in accordance with Article 1.6, including Named Subcontractor Bidders Qualification Statement Form, and Subcontractors

Licenses Form (Section 00485, 00485B, 00485C)

k. State of Connecticut DAS Update (Bid) Statement (Section 00490)
l. State of Connecticut DAS Contractor Prequalification Certificate
m. Certificate of Legal Existence from State of Organization

8.2 Bid Forms shall be completed in ink or by typewriter. The Bid price of each item on the form shall be stated in words, and figures. If unit prices are required on the Bid Form, discrepancies between unit prices and their respective total amounts will be resolved in favor of the unit prices. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

8.3 Bids by corporations shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and 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 below the signature.

8.4 Bids by limited liability companies shall be executed in the limited liability company name by a duly authorized member or manager of the company. The company address and State of organization shall be shown below the signature.

8.5 Bids by partnerships shall be executed in the partnership name and signed by a partner, whose title shall appear under the signature. The official address of the partnership shall be shown below the signature.

8.6 All names shall be typed or printed below the signature. Signatures shall be in blue ink.

8.7 The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

8.8 The address to which communications regarding the Bid are to be directed shall be shown.

8.9 One copy of each Bid shall be submitted in a sealed opaque envelope bearing on the outside the Bidder's name, address, and the Project Title for which the Bid is submitted. (If forwarded by mail, Bid and sealed envelope marked as described above shall be enclosed in another envelope with the notation "BID ENCLOSED" on the face and addressed as indicated in the Invitation to Bid.)

ARTICLE 9. RECEIPT OF BIDS

9.1 Sealed Bids for the work of this Contract will be received at the time and place indicated in the Invitation to Bid.

9.2 OWNER may consider informal any Bid not prepared and submitted in accordance with the provisions hereof.

9.3 Bidders are cautioned that it is the responsibility of each individual bidder to assure that their bid is in the possession of the responsible official or the designated alternate prior to the stated time and at the place of the Bid Opening. Owner is not responsible for bids delayed by mail and/or delivery services, of any nature.

9.4 Upon the opening of a Bid, the Owner will perform a cursory review of the documents submitted with the Bid to determine whether or not all of the following items are included as described below. Any bid that does not include all of the following documents will be deemed non-responsive, will not be the subject of any further review or consideration and will be rejected by the Owner.

a. Bid Form (Section 00300) – Fully completed original bid form signed in blue ink. A price must be inserted for each item in the Schedule of Prices.

b. Bid Security – (i) Original bid bond (Section 00410) signed and acknowledged from a surety licensed in Connecticut and listed on the Department of Treasury's Listing of Approved Sureties with an underwriting limitation of no less than the full amount of the bid; or (ii) bid security by cash or check as permitted, and in amounts required, under Article 6 of the Instructions to Bidder.

c. Bidder's Qualification Form (Section 00420) – Fully completed original signed under oath in blue ink.

d. Affidavit of Non-Collusion & Independent Price Determination (Section 00430) – Original signed under oath in blue ink.

e. Certificate of Corporate Authority (Section 00440)

f. OSHA Compliance History Certificate (Section 00445) – Original signed under oath in blue ink.

g. Fair Employment Practices Qualification (Section 00450) – Fully completed original signed in blue ink.

h. Letter re: Performance and Payment Bonds (Section 00460)

i. MDC Contractor Safety Program (Section 00470) – Contractor Safety Questionnaire (Attachment A) – Fully completed original signed in blue ink.

j. Small Local Business Enterprise (SLBE) Forms (Section 00482)

k. List of Subcontractors in accordance with Article 1.6, including Named Subcontractor Bidders Qualification Statement Form, and Subcontractors Licenses Form (Section 00485, 00485B, 00485C).

l. Copy of Prequalification Certificate issued by Connecticut Department of Administrative Services (DAS), and Update (Bid) Statement, if applicable (Section 00490).

m. Unless the Bidder is an individual, a Certificate of Legal Existence from the Bidder's State of Organization.

ARTICLE 10. MODIFICATION AND WITHDRAWAL OF BIDS

10.1 Bids may be modified only by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

10.2 Bids may be withdrawn prior to the scheduled time (or authorized postponement thereof) for the opening of Bids.

10.3 Any Bid received after the time and date specified shall not be considered. No Bid may be withdrawn for a period of **ONE HUNDRED AND TWENTY** days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids. A Bid may be withdrawn prior to the opening of the first Bid only upon submission of a written request to the District Clerk.

ARTICLE 11. AWARD OF CONTRACT

11.1 The Contract will be awarded to the lowest responsible and eligible Bidder (Successful Bidder). Such a Bidder shall possess the skill, ability, and integrity necessary for the faithful performance of the work. The term "lowest responsible and eligible Bidder" as used herein shall mean the Bidder whose **Total Base Bid plus accepted bid alternatives (Base Bid Items 1 through 10, Inclusive)** is the lowest of those Bidders possessing the skill, ability and integrity necessary to the faithful performance of the Work. Owner may accept any combination of Bid Alternatives with the Base Bid at its discretion.

11.1.1 The Owner reserves the right to reject any or all Bid Alternates prior to the designation of the lowest responsible and eligible bidder.

11.1.2 Note that a Bidders past performance of satisfactory work for the District is a specific condition of eligibility. Bids received from any Bidder who has been rated unacceptable in accordance with Section 01390 will not be considered for award for the period specified therein.

11.2 Owner reserves the right to reject any and all Bids, to waive any and all informalities if it is in Owner's best interest to do so, and the right to disregard all nonconforming, non-responsive or conditional Bids.

11.3 A Bid which includes for any item a Bid Price that is abnormally low or high may be rejected as unbalanced.

11.4 Owner also reserves the right to reject the Bid of any Bidder that Owner considers to be unqualified relative to Article 1 above.

11.5 If the Contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within **ONE HUNDRED AND TWENTY (120)** days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids. All bids shall remain open for **ONE HUNDRED AND TWENTY (120)** days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids but Owner may, at Owner's sole discretion, release any Bid and return the Bid Security prior to that date.

11.6 All Bidders are requested to note that, in addition to the award criteria listed above, the Owner reserves the right to increase or decrease the quantities of the items listed in the bid proposal. However, if the quantity of any item contained in the bid proposal increases or decreases by more than fifteen percent (15%) due to changes by the Owner to the Contract Drawings, and the total dollar change of that bid item is significant, either party may request that the unit price for such item be reviewed and revised accordingly.

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

ARTICLE 12. EXECUTION OF AGREEMENT

12.1 When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by at least one unsigned copy of the Agreement and all other applicable Contract Documents. Within **ten (10) days**, excluding Saturdays, Sundays and legal holidays, after the date of receipt of such notification Contractor shall execute and return all copies of the Agreement and all other applicable Contract Documents to Owner.

ARTICLE 13. SAFETY AND HEALTH REGULATIONS

13.1 This project is subject to the Safety and Health Regulations (CFR 29, Part 1926 and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24,1974 and CFR 29, Part 1910, General Industry Safety and Health Regulations Identified as Applicable to Construction.

13.2 The Successful Bidder shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 (PL-91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL-91-54).

13.3 The Successful Bidder shall have a competent person or persons, as required under the Occupational Safety and Health Act on the Site to inspect the Work and to supervise the conformance of the Work with the regulations of the Act.

ARTICLE 14. FEDERAL REQUIREMENTS

14.1 The Contractor must comply with the Anti-Kickback Act and the Contract Work Hours and Safety Standards Act, Title VI of the Civil Rights Act of 1964 and Executive Orders 11246 and 11375.

14.2 The Contractor must comply, and shall be responsible for ensuring that its subcontractors comply, with the Anti-Kickback Act and the Contract Work Hours and Safety Standards Act, Title VI of the Civil Rights Act of 1964 and Executive Orders 11246 and 11375.

ARTICLE 15. STATE WAGE RATES

15.1 State wage rates apply to this project. The State Wage Determination is included in Part II of the Supplementary Conditions.

15.2 It is the responsibility of the Contractor before the bid opening to request, if necessary, any additional information on State Wage Rates for those tradespeople who are not covered by the applicable Wage Determination, but who may be employed for the proposed work under this Contract.

15.3 All construction associated with this contract will be governed by Heavy and Highway Rates.

ARTICLE 16. NONDISCRIMINATION IN EMPLOYMENT

16.1 Contracts for work under this Project will obligate the Contractor and Subcontractors not to discriminate in employment practices.

16.2 Bidders for the Contract shall indicate in their Bid, whether they have previously performed work subject to the President's Executive Order No. 11246, or any preceding similar Executive Order.

16.3 Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the Award of the Contract.

16.4 Successful bidders must, if requested, submit a list of all Subcontractors who will perform work on the Project and written signed statements from authorized agents of the labor pools with which they will or may deal for employees on the Work, together with supporting information to the effect that said labor pools' practices and policies are in conformity with Executive Order No. 11246, and that said labor pools will affirmatively cooperate in or offer no hindrance to the recruitment, employment, and equal treatment of employees seeking employment and performing work under the Contract, or a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish same prior to the Award of the Contract.

16.5 Successful Bidders must be prepared to comply in all respects with the U.S. Environmental Protection Agency Labor Standards form entitled: "Labor Standards Provisions for Federal and Federally Assisted Contracts", dated May, 1987, a copy of which is included in Part II of the Supplementary Conditions.

ARTICLE 17. MANUFACTURER'S EXPERIENCE

17.1 Wherever it may be written that an equipment manufacturer must have a specified period of experience with its product, equipment which does not meet the specified experience period can be considered if the equipment supplier or manufacturer is willing to provide a bond or cash deposit for the duration of the specified time period which will guarantee replacement of that equipment in the event of failure. Such bond shall be an Efficiency Guarantee Bond, executed on forms to be approved by the Owner.

ARTICLE 18. ACCESS TO SITE

18.1 The Owner, Engineer, representatives of the U.S. Environmental Protection Agency and of the State of Connecticut and any local agencies having a direct interest in the Work shall have access to the Work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access and inspection. Refer to Article 13.02 of the General Conditions for additional requirements.

ARTICLE 19. INFORMATION REGARDING BUY AMERICAN PROVISION

19.1 The Buy American Provision of Public Law 95-217 (Section 215 of Public Law 92-500 as amended) as implemented by EPA regulations and guidance, generally requires that preference be given to the use of domestic construction material in the performance of this Contract.

19.2 Bids or proposals offering use of non-domestic construction material may be acceptable for award if the EPA Award Official waives the Buy American provision based upon those factors that are deemed relevant, including: (i) such use is not in the public interest; (ii) the cost is unreasonable; (iii) the available resources of the Agency are not sufficient to implement the provision, or (iv) the articles, materials, or supplies of

the class or kind to be used or the articles, materials, or suppliers from which they are manufactured are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality for this particular project. The EPA Award Official may also waive the Buy American provision if it is determined that application of this provision is contrary to multilateral government procurement agreements. Such evidence as the EPA Award Official may deem relevant shall be furnished to justify use of non-domestic construction material.

ARTICLE 20 RESERVED

ARTICLE 21. UTILIZATION OF SMALL LOCAL BUSINESS ENTERPRISES (SLBE)

21.1 The MDC Board of Commissioners has established an SLBE program to support local contract spending in the eight member towns of the District (Bloomfield, East Hartford, Hartford, Newington, Rocky Hill, West Hartford, Wethersfield and Windsor, CT). Pursuant to the new program, all bids within a specified range ($3,000 - $500,000) are reviewed to ensure local spending to the greatest extent possible, consistent with the qualifications and experience required for successful completion of this contract. SLBE firms are firms and/or businesses that are: 1) (a) certified by the State of Connecticut – Department of Administrative Service (DAS) as a small business and maintaining its primary office or location or having a significant business presence within one or more of the MDC's eight member towns, and/or (b) certified by the State of Connecticut Department of Transportation (DOT) as a Disadvantaged Business Enterprise (DBE) and maintaining its primary office or location or having a significant business presence within one or more of the MDC's eight member towns; and 2) registered with the MDC's Central Business Registry.

21.2 The MDC encourages qualified SLBE's to bid on this contract as prime contractors if they believe that they are qualified to perform the work and services contemplated herein. The successful bidder, if not a SLBE, is required to abide by the Metropolitan District's policies regarding set-aside provisions for the benefit of SLBE businesses. The Contractor must take affirmative steps to ensure that SLBE businesses participate to the maximum extent practicable. The SLBE Administrator has reviewed this Request for Proposal and has determined that, with respect to the contract to be awarded, the requirement for SLBE participation shall be a minimum twenty percent (20%).

21.3 Documentation of SLBE information shall be submitted at the time of the bidder's proposal submission along with a plan describing how these SLBE requirements will be met over the life of the project. Documentation shall consist of completed Mandatory Subcontracting Forms that are attached hereto in 00482A. Any bid which fails to include the required SLBE documentation or which does not meet the minimum requirements of the MDC as set forth in the Mandatory Subcontracting Forms may be considered non-responsive.

21.4 Non-SLBE contractors may request a waiver from the mandatory SLBE

subcontracting requirement before or at the time the bid is submitted. Such waiver requests may be made for exemption from or partial reduction of, the mandatory SLBE subcontracting requirements stated herein. All waiver requests shall be considered by the Administrator; however, such requests shall not be granted unless the non-SLBE contractor requesting such waiver has made good faith efforts to award the required percentage of subcontracts to SLBE's, as explained in 00482B to this Request for Proposal.

21.5 Further, while assignment of work to the SLBE firms at twenty percent (20%) is a mandated requirement, respondents are encouraged to propose ways to increase the percentage of work assigned to qualified SLBE firms. Within fourteen (14) calendar days after the Respondent's selection, the Respondent shall submit to the District executed copies of the SLBE subcontracts required under the provisions of this section. No authorization to proceed will be made until executed SLBE subcontracts are received by the District. Failure to submit these documents by the close of business of the fourteenth calendar day after the Respondent's selection will result in the bid being non-responsive and cause the rejection of the bid.

ARTICLE 22. CONTRACTOR EVALUATION

22.1 The Successful Bidder will be evaluated on job performance in accord with Section 01390.

END OF SECTION

BID FORM TO

THE METROPOLITAN DISTRICT

MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION
WINDSOR, CONNECTICUT

CONTRACT NUMBER 2013-04

The undersigned declares that the only persons or parties interested in this Bid as principals are as stated; that the Bid is made without any collusion with other persons, firms, or corporations; that all the Contract Documents as prepared by The Metropolitan District have been carefully examined; that the undersigned is fully informed in regard to all conditions pertaining to the Work and the place where it is to be done, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Bid Form is a part.

If a Notice of Award accompanied by at least one unsigned copy of the Agreement and all other applicable Contract Documents is delivered to the undersigned within **ONE HUNDRED AND TWENTY (120)** days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening of the Bids, the undersigned will within **ten (10) days**, excluding Saturdays, Sundays, and legal holidays, after the date of receipt of such notification, execute and return all copies of the Agreement and all other applicable Contract Documents to Owner. The premiums for all Bonds required shall be paid by Contractor and shall be included in the Contract Price. The undersigned Bidder further agrees that the Bid Security accompanying this Bid shall become the property of Owner if the Bidder fails to execute the Agreement as stated above.

The undersigned hereby agrees that the Contract Time shall commence on the date set forth in the Notice to Proceed and to fully complete the Work for the Bid Items within **68 Calendar Days** and in accordance with the terms as stated in the Agreement. The undersigned further agrees to pay Owner, as liquidated damages, $1,500 per day for each calendar day beyond the Contract Time Limit or extension thereof that the Work remains incomplete, in accordance with the terms of the Agreement.

All addenda related to this Contract issued by the Owner shall be attached to and made part of this Contract. All such addenda shall be attached and submitted with this bid as confirmation and acknowledgment of receipt. Failure to submit addenda acknowledgment and confirmation along with your bid package may cause your bid to be considered non-responsive and thereby rejected. The Owner assumes no responsibility nor shall it or its representatives be held liable for failure of the bidder to submit addenda as required hereunder.

The undersigned acknowledges receipt of addenda numbered:

Addenda #:_____ Dated:_____ Addenda #:_____ Dated:_____
Addenda #:_____ Dated:_____ Addenda #:_____ Dated:_____

In accordance with the above understanding, the undersigned proposes to perform the Work, furnish all materials and complete the Work in its entirety in the manner and under the conditions required at the prices listed as follows:

300-1

SCHEDULE OF PRICES
CONTRACT NO. 2013-04
MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION PROJECT

BIDDER MUST FILL IN THE UNIT PRICES AND COMPUTE THE TOTALS				
(In case of error or discrepancies UNIT PRICES govern)				
ITEM NO.	DESCRIPTION OF SCHEDULED ITEM	UNIT PRICES Dollars Figure UNIT PRICES Written Words	ESTIMATED QTY. / UNIT OF MEASURE	TOTAL PRICE Dollar Figure TOTAL PRICE Written Words

SEWER MAIN AND LATERAL REPLACEMENT				
1a	Remove Existing Sewer and Install 8-inch PVC Pipe (Section 02622)	$	1,425 LF	$
1b	Remove Existing Lateral Pipe and Install 6-inch PVC Lateral Sewer Pipe (Section 02622)	$	1,600 LF	$
SEWER MAIN AND LATERAL REHABILITATION				
2a	8-inch Cured-in-Place Pipe (Section 02766)	$	245 LF	$
2b	10-inch Cured-in-Place Pipe (Section 02766)	$	415 LF	$
2c	Point Repairs 8-inch Sewer (Section 2640	$	7 EA	$
2d	Point Repairs 10-inch Sewer (Section 2640	$	12 EA	$

SCHEDULE OF PRICES
CONTRACT NO. 2013-04
MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION PROJECT

BIDDER MUST FILL IN THE UNIT PRICES AND COMPUTE THE TOTALS				
(In case of error or discrepancies UNIT PRICES govern)				
ITEM NO.	DESCRIPTION OF SCHEDULED ITEM	UNIT PRICES Dollars Figure UNIT PRICES Written Words	ESTIMATED QTY. / UNIT OF MEASURE	TOTAL PRICE Dollar Figure TOTAL PRICE Written Words
MANHOLES				
3a	Type II Precast Sewer Manhole (Section 02605)	$	32 VF	$
3b	Remove and Replace Existing Manhole Frame and Cover (Section 02605)	$	6 EA	$
3c	Removal of Existing Sanitary Manhole (Section 02053)	$	3 EA	$
DRAINAGE SYSTEM IMPROVEMENTS				
4a	Drain Pipe 15" RCP All Depths (Section 02612)	$	250 LF	$
4b	Drain Pipe 18" RCP All Depths (Section 02612)	$	30 LF	$
4c	Removal of Existing Drain Manhole (Section 02053)	$	4 EA	$

SCHEDULE OF PRICES
CONTRACT NO. 2013-04
MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION PROJECT

BIDDER MUST FILL IN THE UNIT PRICES AND COMPUTE THE TOTALS				
(In case of error or discrepancies UNIT PRICES govern)				
ITEM NO.	DESCRIPTION OF SCHEDULED ITEM	UNIT PRICES Dollars Figure UNIT PRICES Written Words	ESTIMATED QTY. / UNIT OF MEASURE	TOTAL PRICE Dollar Figure TOTAL PRICE Written Words
4d	Precast Concrete Drain Manhole 4-ft Diameter (Section 02605)	$	5 VF	$
4e	Precast Concrete Catch Basin (Section 02720)	$	13 VF	$
4f	Removal of Existing Catch Basin (Section 02053	$	2 EA	$
4g	Removal of Existing Drain Pipe (Section 02053	$	230 LF	$
EARTHWORK				
5a	Earth Excavation (<10 ft.) (Section 2200 & 2201)	$	2,700 CY	$
5b	Earth Excavation (>10 ft.) (Section 2200 & 2201)	$	40 CY	$
5c	Bank Run Gravel (Section 2202 & 2230)	$	1,340 CY	$

SCHEDULE OF PRICES
CONTRACT NO. 2013-04
MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION PROJECT

BIDDER MUST FILL IN THE UNIT PRICES AND COMPUTE THE TOTALS				
(In case of error or discrepancies UNIT PRICES govern)				
ITEM NO.	DESCRIPTION OF SCHEDULED ITEM	UNIT PRICES Dollars Figure UNIT PRICES Written Words	ESTIMATED QTY. / UNIT OF MEASURE	TOTAL PRICE Dollar Figure TOTAL PRICE Written Words
5d	Crushed Stone (Section 02202)	$	8 CY	$
5e	Flowable Fill (Section 02202)	$	27 CY	$
5f	Miscellaneous Concrete (Section 03302)	$	7 CY	$
5g	Test Pits (Section 02011)	$	70 CY	$
REMOVAL AND DISPOSAL OF CONTAMINATED AND POLLUTED SOIL				
6a	Removal and Disposal of Contaminated Soil (Section 02260)	$	700 TON	$
6b	Removal and Disposal of Polluted Soil (Section 02260)	$	850 TON	$
6c	Hazardous Materials Procedures (Section 02260)	$	LUMP SUM	$

SCHEDULE OF PRICES
CONTRACT NO. 2013-04
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BIDDER MUST FILL IN THE UNIT PRICES AND COMPUTE THE TOTALS				
(In case of error or discrepancies UNIT PRICES govern)				
ITEM NO.	DESCRIPTION OF SCHEDULED ITEM	UNIT PRICES Dollars Figure UNIT PRICES Written Words	ESTIMATED QTY. / UNIT OF MEASURE	TOTAL PRICE Dollar Figure TOTAL PRICE Written Words
PAVED SURFACE RESTORATION				
7a	Temporary Paved Surface, Bituminous Concrete Class 2, 2-inch Top, Processed Aggregate Base , 10" (Section 2510)	$	2,500 SY	$
7b	Permanent Paved Surface, Bituminous Concrete Class 4, 6-inch Binder Class 1, 3-inch Top, Processed Aggregate, Base, 10" (Section 2510)	$	30 SY	$
SURFACE RESTORATION				
8a	Loaming and Seeding (Section 02930)	$	130 SY	$
8b	Remove and Replace Concrete Sidewalk (Section 02510)	$	225 SY	$
8c	Remove and Replace Bituminous Driveway, Ramp/Apron (Section2510)	$	60 SY	$

SCHEDULE OF PRICES
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(In case of error or discrepancies UNIT PRICES govern)				
ITEM NO.	DESCRIPTION OF SCHEDULED ITEM	UNIT PRICES Dollars Figure UNIT PRICES Written Words	ESTIMATED QTY. / UNIT OF MEASURE	TOTAL PRICE Dollar Figure TOTAL PRICE Written Words
MISCELLANEOUS WORK				
9a	General Requirements (Not Greater than 7% of Total Bid, Excluding Misc. Work) Section 01025)	$	Lump Sum	$
9b	Mobilization and Demobilization (Not Greater than 5% of Total Bid, Excluding Misc. Work) (Section 01025)	$	Lump Sum	$
9c	Catch Basin Sedimentation Control (2270)	$	20 EA	$
9d	Police Detail (Section 01576)	$	Allowance	$32,900.00
9e	Certified Flaggers (Section 01576)	$	Allowance	$9,000.00
9f	Miscellaneous Work & Cleanup (Section 02901 & 02971)	$	Lump Sum	$
MAINTENANCE AND PROTECTION OF TRAFFIC				

SCHEDULE OF PRICES
CONTRACT NO. 2013-04
MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION PROJECT

BIDDER MUST FILL IN THE UNIT PRICES AND COMPUTE THE TOTALS				
(In case of error or discrepancies UNIT PRICES govern)				
ITEM NO.	DESCRIPTION OF SCHEDULED ITEM	UNIT PRICES Dollars Figure UNIT PRICES Written Words	ESTIMATED QTY. / UNIT OF MEASURE	TOTAL PRICE Dollar Figure TOTAL PRICE Written Words
10a	Maintenance and Protection of Vehicular & Protection of Traffic (01570)	N/A	Lump Sum	$
10b	Construction Signs (Section 1570)	$	575 SF	$
10c	42" Traffic Cones or Traffic Drum (Section 01570)	$	60 EA	$
10d	Construction Barricades	$	8 EA	$
10e	Temporary Pavement Markings, 12-Inch White (Section 1570)	$	50 LF	$
10f	Temporary Pavement Markings, 4-Inch Yellow (Section 1570)	$	3,000 LF	$
10g	Temporary Pavement Markings, Symbols and Legends (Section 1570)	$	440 SF	$

SCHEDULE OF PRICES
CONTRACT NO. 2013-04
MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION PROJECT

BIDDER MUST FILL IN THE UNIT PRICES AND COMPUTE THE TOTALS				
(In case of error or discrepancies UNIT PRICES govern)				
ITEM NO.	DESCRIPTION OF SCHEDULED ITEM	UNIT PRICES Dollars Figure	ESTIMATED QTY. / UNIT OF MEASURE	TOTAL PRICE Dollar Figure
		UNIT PRICES Written Words		TOTAL PRICE Written Words

TOTAL BID:	$
Items 1 through 10 inclusive:	

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

The undersigned agrees that extra work, if any, will be performed in accordance with Article 10 of the Conditions of the Contract and will be paid for in accordance with Article 11 of the Conditions of the Contract.

The undersigned has previously performed work subject to the President's Executive Order No. 11246, which relates to nondiscrimination.

Amounts shall be shown in both words and figures, where indicated. In case of discrepancy, the amount shown in words will govern.

The above prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance and incidentals required to complete the Work.

Basis of award shall be based on the lowest responsible and eligible Bidder whose Base Bid Plus Accepted Alternates is the lowest of those Bidders possessing the skill, ability and integrity necessary to the faithful performance of the work.

The names and residences of all persons and parties interested in the foregoing Bid as principals are as follows:

(Give first and last names in full. In the case of a corporation, see Article 8.3 of the Instructions to Bidders, in the case of a partnership, see Article 8.4 of the Instructions to Bidders.)

_____

_____

_____

300-10

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

The undersigned hereby certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the word "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

_____	_____
Social Security Number or Federal Identification Number	Signature of Individual or Corporate Name

By: _____
Corporate Officer
(if applicable)

Notice of acceptance should be mailed, faxed, or delivered to the following:

_____
(Name)

By: _____
(Title)

_____
(Business Address)

_____
(City and State)

Date _____

Note: If the Bidder is a corporation, indicate State of incorporation under signature, complete the certification below and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

300-11

CERTIFICATE OF CORPORATE CONTRACTOR

I, _____, certify that I am

_____ _____ _____of the Corporation which executed the above
(Title)

Contract; that _____who signed this
(Name)

Contract in behalf of said Corporation was then _____
(Title)

of the Corporation signing for and on behalf of said Corporation by authority of its governing body; and was acting within the scope of its corporate powers.

By:_____ _____

(Corporate Seal)

_____ _____

(Title)

300-12

DOCUMENT 00400 SUPPLEMENTS TO BID FORMS

TABLE OF CONTENTS

00410 BID BOND

00420 BIDDER'S QUALIFICATION FORM

00430 AFFIDAVIT OF NON-COLLUSION AND INDEPENDENT PRICE DETERMINATION

00440 CERTIFICATE AS TO CORPORATE BIDDER

00445 OSHA COMPLIANCE HISTORY CERTIFICATION

00450 THE METROPOLITAN DISTRICT FAIR EMPLOYMENT EQUAL OPPORTUNITY, NON-DISCRIMINATION

00460 LETTER RE: PERFORMANCE AND PAYMENT BONDS

00470 MDC CONTRACTOR SAFETY PROGRAM

00480 RESERVED

00481 RESERVED

00482 SLBE DOCUMENTS

00485 LIST OF SUBCONTRACTORS

00485-B NAMED SUBCONTRACTOR BIDDER’S QUALIFICATION STATEMENT

00485-C CONTRACTOR’S LICENSING

00490 STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES UPDATE (BID) STATEMENT

DOCUMENT 00410 BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned, _____ as PRINCIPAL, and _____, as SURETY are held and firmly bound unto The Metropolitan District hereinafter called the "District," in the penal sum of _____Dollars ($_____), lawful money of the United States of America, to be paid to the said District, the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying bid, dated _____, 20___, in connection and conformance with the District Project Manual, Contract Number 2013-04 and all work associated therewith as set forth in certain Contract Drawings and Specifications filed at the office of the District.

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein before the opening of the same, and, if no other period be specified, said bid shall remain in effect for **one hundred twenty (120) working day**s**,** excluding Saturdays, Sundays and legal holidays, after the said opening and, if the bid is awarded to the Principal, the Principal if no other period be specified, within **ten (10) days** after the fully executed Contract is presented to him or her give both bond with good and sufficient surety or sureties, as may be required, for the faithful performance, payment and proper fulfillment of such Contract and insurance certificates as may be required by such Contract; or in the event of the withdrawal of said bid within the period specified, or the failure to enter into such Contract and give such bond within the time specified, the Principal shall pay the District the difference between the amount specified in said bid and the amount for which the District may procure the required work or supplies or both, if the latter amount be in excess of the former; or if said bid shall be rejected by the District, then the above obligation shall be void and of no effect, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this _____ day of _____, 20___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In presence of:

_____ _____L.S.

_____ _____L.S.
(Business Address)

_____ _____L.S.
(Individual Principal)

_____ _____L.S.
(Address)

_____ _____(SEAL)
(Corporate Principal)

_____ By: _____

_____
(Business Address)

Attest:

_____ _____
(Corporate Surety)

Affix
Corporate
Seal

_____

By_____
(Title)

DOCUMENT 00420 BIDDER'S QUALIFICATION FORM

The bidder is required to provide the following information to enable the District to evaluate the bidder's ability to perform the Work.

A. Form of bidder (corporation, limited partnership, partnership, individual):_____

B. Date of organization/commencement:_____

C. State in which organized:_____

D. If a corporation:

1. The corporation is qualified to do business and is in good standing in the State of Connecticut
__yes __no

2. The corporation's agent for service of process is:

Name: _____
Address:_____
_____

3. The corporation is in good standing with the: U.S. Internal Revenue Service __yes __no;
Connecticut Department of Labor __yes ___no;
U.S. Labor Department __yes __no.

E. License number under which Contractor will perform work #_____.

1. Name of licensee _____.

F. Please describe other work that you have performed which is similar to the work, stating the dates performed, the entity for whom the work was performed and whether the work was performed in accord with the terms of the agreement:
_____
_____
_____
_____
_____
_____
_____
_____
_____

G. Please list at least two (2) references the District may contact to evaluate the bidder's experience, skill, available financial resources, credit and business standing:

_____
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DOCUMENT 00430

AFFIDAVIT OF NON-COLLUSION AND INDEPENDENT PRICE DETERMINATION

STATE OF _____

ss. at _____

COUNTY OF _____

This Affidavit is made to the Metropolitan District Commission ("MDC") by the undersigned ("Bidder") in connection with The Bid ("Bid") submitted by Bidder in response to MDC's competitive bid solicitation process.

_____ hereby deposes and says:

1. THAT all representations made by Bidder and contained in the Bid are true, accurate and compete;

2. THAT neither Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest has (i) in any way colluded , conspired, connived, or agreed, directly or indirectly, with any other bidder, firm or person to submit, or to refrain from submitting, a competing bid in connection with this bid submission, or (ii) in any manner, directly or indirectly, sought by agreement or collusion of communication or conference with any other bidder, firm or person to fix the price or prices in the Bid or any bid of any other bidder or to fix any overhead, profit or cost element of said Bid or an other bid or bidder, or (iii) sought in any way to secure through collusion, conspiracy, connivance, or agreement any advantage against MDC or any person interested in the proposed Contract;

3. THAT the Bid has been determined independently by Bidder, its team members or representatives, without consultation, communication or agreement for the purpose of restricting competition, and is not tainted by any collusion or conspiracy by any parties in interest, including Bidder;

4. THAT the Bid has not been disclosed by Bidder to any other bidder, potential bidder and will not be disclosed by Bidder, prior to bid opening , directly or indirectly to any other Bidder or potential bidder;

5. THAT no person acting for or employed by the MDC is now or will hereafter be directly or indirectly interested therein or in any portion of the profits thereof in any manner which is contrary to law or is unethical. And that no person acting for or employed by the MDC is now or will hereafter benefit financially directly or indirectly from bidder's award of the proposed Contract or participation in the bidding process;

6. THAT bidder has submitted only the Bid and has not directly or indirectly used a related company, agent, employee, officer, partner, representative or nominee to submit any other bid;

The undersigned, who is responsible for determining the prices being offered in the Bid, has read the foregoing and the same is true and correct to the best of his or her knowledge, information and belief;

IN WITNESS WHEREOF, the undersigned has executed this Affidavit as of this _____ day of _____, 20___.

BIDDER:

_____

Printed Name of Bidder

By:_____
Signature of Bidder

_____
Print Name and Title of
Authorized Signatory

Subscribed and sworn to before me,
The undersigned, this _____ day of
_____, 20____.

_____
Commissioner of the Superior Court
Notary Public
My Commission Expires:_____

Notice Concerning Legal Action

Any person who knowingly makes a false statement of otherwise executes a document he/she knows to be false, with the intent to mislead a municipality is in violation of Connecticut General Statute 53a-157b, Making a False Statement, and shall be subject to penalty.

DOCUMENT 00440 CERTIFICATE AS TO CORPORATE BIDDER

I,_____, certify that I am
(Name)
the _____of the Corporation named as Bidder
(Title)
in the Bid Form; that _____who
(Name)
signed said Bid Form on behalf of the Bidder was then_____
(Title)
_____of said Corporation; that I know his signature; that his signature thereto is genuine and that said Bid Form was duly signed, sealed and executed for and in behalf of said Corporation by authority of its governing body.

DATE_____ _____
Secretary

DOCUMENT 00445 OSHA COMPLIANCE HISTORY CERTIFICATION

The undersigned Bidder hereby certifies as follows:

1. It has not, in the past three years, received any citations from the United States Department of Labor, Occupational Safety and Health Administration for willful or serious violations of the Occupational Safety and Health Act ("OSHA"); or

2. It has been cited for willful or serious violations of the OSHA in the past three years and the circumstances and resolutions of such violations are as follows:

_____
_____
_____
_____

3. The following is a list of all OSHA violations (open or closed) issued against the Bidder in the past three years:

_____
_____
_____
_____

_____
Name of bidder if the bidder is an Individual

_____
Name of partner if the bidder is a partnership

_____
Name of officer if the bidder is a corporation

Subscribed and sworn to before me, the undersigned, this _____ day of _____, 20____.

_____
Commissioner of the Superior Court
Notary Public/My Commission Expires

DOCUMENT 00450 THE METROPOLITAN DISTRICT FAIR EMPLOYMENT EQUAL OPPORTUNITY, NON-DISCRIMINATION

The Fair Employment Practices Qualification Form inserted into this Project Manual is deemed to be a part hereof. Both pages are to be completely filled in. Failure to submit the completed form may cause your bid to be considered non-responsive and thereby rejected.

Equal opportunity requirements in the Instruction to Bidders or elsewhere in this Project Manual are deemed to be part of the Contract Agreement.

Non-Discrimination requirements in the Instruction to Bidders or elsewhere in this Project Manual are deemed to be part of the Contract Agreement.

FAIR EMPLOYMENT PRACTICES QUALIFICATION FORM
FOR VENDORS AND BIDDERS
THE METROPOLITAN DISTRICT

Every employer having 10 or more employees must fill out this complete Questionnaire. Firms having fewer than 10 employees are required to fill out Sections A and C only. FAILURE TO COMPLETE AND RETURN THIS FORM MAY BE SUFFICIENT CAUSE FOR REJECTION OF YOUR BIDS OR CANCELLATION OF PURCHASES.

This questionnaire will be evaluated by The Metropolitan District to determine whether or not your firm is to be retained on the District's Bidding and Vendor List.

SECTION A: All vendors must fill out this section and sign on page 2.

Name of Firm: _____ **Number of Employees:** _____

Address: _____ **Telephone Number:** _____

Spokesperson for Firm: _____ **Title:** _____

Nature of Business: _____

SECTION B: This section must be filled out by all employers having 10 or more employees.

The employer will indicate its willingness or unwillingness to participate in the following affirmative action employment practices by circling one of the key letters. The key letters are:

- **A This is now the practice of the Company.**
- **B The Company will adopt this affirmative action.**
- **C The Company cannot or will not adopt this affirmative action. (If 'C' is circled, reason must be stated.)**

It is understood that the Company's willingness to participate in affirmative action employment practices will be evaluated by The Metropolitan District and this evaluation may directly influence vendor qualification.

1. **The Company will adopt a policy of non-discrimination on the basis of race, color, creed, mental or physical disability, age, sex, national origin or ancestry.**
   A B C Reason:

2. **The Company's non-discriminatory policies are in writing and will be communicated to the following:**
   All employees: A B C Reason

   All recruitment sources: A B C Reason:

   All relevant labor unions: A B C Reason:

SECTION B: (Continued)

3. If the Company conducts any formal or informal training programs, the recruitment for these programs will be conducted so as not to discriminate against minority group persons.

A B C Reason:

4. The Company will take steps to integrate all positions, departments and plant locations.

A B C Reason:

5. The Company will review its qualifications for each job to determine whether such standards eliminate those unemployed persons who could, if hired, perform the duties of the job adequately. The following qualifications will be reviewed:

Education	**A B C Reason:**
Experience	**A B C Reason:**
Tests	**A B C Reason:**
Arrest Record	**A B C Reason:**

6. The Company will advise the Connecticut Commission on Human Rights and Opportunities as to employment opportunities as they become available.

A B C Reason:

SECTION C:

Firm, Name and Signature. This section must be filled out by all Vendors and Bidders.

Name of Firm: _____

Address: _____ **Telephone Number:** _____

Signature of Officer: _____

Title: _____ **Date:** _____

PLEASE RETURN FORM TO: THE METROPOLITAN DISTRICT
PURCHASING AGENT
P. O. BOX 800
HARTFORD, CT 06142-0800

DOCUMENT 00460 LETTER RE: PERFORMANCE AND PAYMENT BONDS

The Metropolitan District
555 Main Street
PO Box 800
Hartford, CT 06142-0800

Re: Performance and Payment Bonds

Gentlemen:

This is to assure The Metropolitan District that, in the event Contract Number 2013-04 is awarded to _____, the undersigned agrees that it will provide to The Metropolitan District, on behalf of _____ the Performance and Payment Bonds required pursuant to the General Conditions and Supplemental Conditions of the Contract, in the full amount of the Contract.

Sincerely,

SURETY:

BY:_____

The Metropolitan District Contractor Safety Program

Purpose:

To provide MDC personnel and contractors with a clear and concise understanding of the safety requirements and responsibilities needed while working on MDC property and/or MDC projects.

Policy:

All firms contracted by MDC are required by the Occupational Safety and Health Act of 1970 and updates to provide safe and healthy employment to their employees.

MDC, as an employer, is also responsible for providing a safe and healthful work environment for its employees. Contract work may present situations or conditions that potentially could adversely impact the safety and health of MDC employees. This program is intended to ensure that both the MDC and the contractor provide a safe and healthy workplace at all times.

Contractors are required to provide safe workplaces and implement their own safety programs. This Contractor Safety Program is intended to assist in coordinating MDC and contractor operations during construction and renovation projects or providing services to MDC. By becoming familiar with the policies and procedures in the program, the safety-minded contractor will get the job done safely and minimize or eliminate workplace hazards.

Contractors are required to comply with all applicable Federal, State, and Local laws and also follow safe work practices for construction trades. Some of these regulations and safe work practices are outlined in this program.

Contractor management and supervisors must thoroughly review their own work practices and workplace hazards and provide their employees all the necessary training, certifications, and equipment for their safety.

This program applies to all contractors and their subcontractors under contract by the MDC. (All contractors, whether under contract or working under a purchase order agreement, are considered under contract and are covered by this entire program.) The following guidelines and provisions do not impose a duty on the MDC to initiate, maintain, oversee, inspect, supervise or control MDC contracted contractors' or subcontractors' compliance with applicable Federal, State and Local laws or otherwise ensure worksite safety for non-MDC employees. The following guidelines and provisions outline the MDC's role regarding contract administration.

Definitions:

MDC Construction Engineer
An MDC employee assigned to observe the progress of the contract and act as the primary MDC contact with the contractor.

MDC Liaison:
An MDC employee assigned to on-site observation and evaluation of the contractor's compliance with the contract or purchase order agreement.

Contractor:
A firm or individual who has contracted to the MDC to provide services.

Near miss:
A near miss is an incident that occurs that had the potential of causing a personal injury, damage to property or a release to the environment had it not been discovered and avoided in time or did not cause damages due to fortuitous circumstances.

Procedures:

1. The Metropolitan District shall include the Contractor Safety Program in all applicable contracts. The contractor shall complete the Contractor Safety Questionnaire (see Attachment A) and submit it with the bid. The contractor is required to sign the last page of the Questionnaire.
2. The safety record of a prospective contractor shall be one of the factors considered in the awarding of a contract for construction or related work. Factors to be considered are:
    a) Worker's compensation rating (Experience Modification Rating (EMR));
    b) Number of OSHA violations in the past three years;
    c) The type of violations. (e.g. serious or willful, as defined by OSHA); and
    d) The abatement of the violations.
3. EH&S will review the information prospective contractors provide in the Contractors Safety Questionnaire, including but not limited to, factors mentioned in Procedure No. 2.
4. If the information submitted in the Contractor Safety Questionnaire reveals higher rates of unsafe incidents than the acceptable incident rates published for the NAICS code, MDC reserves the right to reject the bid, or may refuse to hire the contractor under a purchase order agreement.
5. Failure to fully complete the Contractor Safety Questionnaire and submit with the bid will result in rejection of the bid for non-compliance, or refusal to hire under a purchase order agreement.

Responsibilities:

All MDC personnel responsible for managing contracts will:

1. Provide contractor with warnings of known hazards that may be encountered in the project;
2. Observe whether work performed by contractor is in compliance with the contract.

The MDC Construction Engineer will review the contract language with EH&S for provisions regarding contractor's duty to:

1. Meet and comply with applicable federal, state, and local environmental, health, and safety regulations and MDC requirements; and
2. Provide its employees with the necessary training, medical exams, and safety equipment.

The MDC Construction Engineer will also:

1. Review the contractual, statutory, and other environmental, health, and safety requirements with the contractor prior to the start of the contract;
2. Instruct the contractor to submit a safety and health plan with the bid package, if applicable*, and provide a copy to the MDC Environment, Health & Safety Department ("EH&S") for review and incorporate the submitted health and safety plan into the contract;
3. Upon receipt of a report of noncompliance or any condition, which poses a serious or imminent danger to human health or safety, or a serious hazard to the environment, issue a request for corrective action to the contractor. Any such request by MDC Construction Engineer or any other authorized MDC personnel for corrective action from the contractor is not to be construed as undertaking a duty for initiating, maintaining, supervising or otherwise ensuring safety at the worksite of non-MDC employees.

The MDC Construction Engineer, and/or the MDC Liaison will:

1. Determine if EH&S has reviewed the contractor's written health and safety plan prior to the pre-construction meeting with the contractor;
2. Provide advanced notification to EH&S of all pre-construction meetings with the contractors so that they may have a representative present;
3. Observe whether contractor is complying with the contract health and safety plan and pertinent environmental, health, and safety regulations and refer any questions regarding compliance with specific regulations to EH&S;
4. Observe whether contractor has complied with its contractual duty to complete safety or environmental permits and make such permits available for review by an authorized person and/or appropriate EH&S personnel;
5. Notify EH&S of accidents and provide EH&S with a copy of the contractor's accident reports; and
6. Notify EH&S of an OSHA complaint and/or inspection of contractor's jobsite.

* EH&S will determine if a Health and Safety Plan or Program is necessary, depending on the nature of the contract or services being provided.

Pre-construction Meeting

Representatives of the contractor shall meet with the MDC Construction Engineer and a EH&S representative prior to the start of construction for the purpose of reviewing safety requirements and pertinent material safety data sheets (MSDS) for the work pertinent to the contract.

MDC is required by OSHA standards, most notably 29 CFR 1910.1200, Hazard Communication Standard, to provide information to contractors of any known hazards present at the work site. This information will be made available to the contractor in the project specifications (pre-bid) and at the pre-construction meeting.

Environment, Health and Safety Department

EH&S will review all contracts at least one week prior to advertising, to determine whether appropriate environmental, health and safety regulations pertinent to the work site have been incorporated into the contract.

EH&S may make periodic on-site visits to review the contractor's compliance with the contracted health and safety plan and applicable environmental, health, and safety requirements. EH&S will distribute reports of the on-site visits to the contractor and Construction Engineer. **Any such on-site visit by EH&S or by MDC Construction Engineer or any other MDC personnel for review of contractor's compliance with its contracted health and safety plan and/or environmental, health or safety requirements shall not be construed as MDC undertaking a duty for initiating, maintaining, supervising or otherwise ensuring safety at the worksite of non-MDC employees.**

Contractor

The contractor's duties shall include but are not limited to:

1. Providing frequent and regular safety inspections of the worksites, materials, and equipment by designated employees of contractor to ensure appropriate safety conditions are in place at all times on the project;
2. Notifying the MDC Construction Engineer of construction accidents immediately upon knowledge of the accident but in no instance shall notification be made more than twenty-four (24) hours after an accident;
3. Providing a detailed Accident/Incident Report of construction accidents, including corrective measures to avoid reoccurrences, within 48 hours.
4. Notifying the Construction Engineer of non-formal and/or formal OSHA complaint notifications and/or OSHA inspections of the jobsite; and
5. Provide training records of OSHA programs related to the project.

Health and Safety Plan

It is the duty of the contractor and any subcontractors to develop and implement a comprehensive health and safety plan for their respective employees and agents, which covers all aspects of onsite construction and activities associated with the contract. The contractor shall provide the MDC Construction Engineer with a copy of this plan with its bid package.

The contractor shall address within its contract the following information pertaining to OSHA regulations. The following OSHA regulations are not an exhaustive list of said regulations nor are the subparts a comprehensive list of the information the contractor should address in its Health and Safety Plan.

Hazard Communication (OSHA 29 CFR 1910.1200)

1. Procedures for labeling and storing all chemical containers brought on MDC property or MDC jobs.
2. Procedures for maintaining and providing material safety data sheets (MSDSs) for all chemicals brought on MDC property/jobs.
3. Procedures for training personnel in the control of anticipated hazards.
4. Statement that employees have been trained.

Personal Protective Equipment (OSHA 29 CFR 1910.132 to 1910.139)
(Including eye, face, head, foot and hand protection).

1. Procedures for conducting workplace hazard assessment that determines the hazards likely to be present and selects types of PPE that will fit and protect the employee.
2. Procedures for use and maintenance of personal protective equipment.
3. Written respiratory protection program. (29 CFR 1910.134)

Confined Space (OSHA 29 CFR 1910.146)

1. Procedures to protect contractor employees from the hazards of entry into permit-required confined spaces.
2. Procedures for coordinating with MDC personnel when entering MDC permit-required confined spaces per MDC Confined Space Program.
3. Procedures for training personnel in the required duties and potential hazards of confined space entry.

Lockout/Tagout (OSHA 29 CFR 1910.147)

1. Procedures pertaining to the servicing and maintenance of machines and equipment in which the "unexpected" energization or start up of the machines or equipment, or release of stored energy could cause injury to contractor or MDC employees.
2. Procedures for training personnel in the required duties and potential hazards of energy control.

Electrical (OSHA 29 CFR 1910 Subpart S)

1. Procedures for compliance with OSHA electrical standards 29 CFR 1910.301 to 1910.335

Compressed Gas and Air Equipment (OSHA 29 CFR 1910.166 to 1910.169)

1. Procedures for safe handling and securing of compressed gas cylinders.

Powered Industrial Trucks (OSHA 29 CFR 1910.178)

1. Procedures for safe operation of forklifts, platform lift trucks, and motorized hand trucks.

Machinery and Machine Guarding (OSHA 29 CFR 1910.211 to 1910.219)

1. Procedures for safe operation and maintenance of equipment with power transmission belts, pulleys, sprockets, chains, or clutches.

Toxic and Hazardous Substances (OSHA 29 CFR 1910.1000 to 1910.1450)

1. Procedures for minimizing employee exposure to toxic and hazardous substances to comply with published permissible exposure limits.

Asbestos (OSHA 29 CFR 1910.1001 and 1926.1101)
Lead (29 CFR 1910.1025/1926.62/1926.103

1. Procedures for preventing disturbance of potential asbestos and/or lead containing materials.
2. Procedures for protecting employees from exposure above the OSHA PEL.
3. Procedures for obtaining asbestos bulk material surveys when the potential exists for the disturbance of potential asbestos containing materials.

Welding and Cutting (OSHA 29 CFR 1926.350 to 1926.354)

1. Procedures for safe transportation and storage of compressed gas cylinders.
2. Procedures for safe welding and cutting including grounding, shielding, PPE, fire prevention (fire watch), Hot Work Permits, ventilation, and performing such operations on metals of toxic significance.

Scaffolds (OSHA 29 CFR 1926.450 to 1926.454)

1. Procedures for safe use of scaffolding and aerial lifts including load capacities, construction techniques, fall protection and protection from falling objects.

Fall Protection (OSHA 29 CFR 1926.500 to 1926.503)

1. Procedures for providing employee fall protection where employees walk or work on work surfaces that are six feet or more above a lower level including but not limited to, portable and fixed ladders, aerial lifts, scaffolds, roofs and elevated work levels and platforms.

Cranes, Derricks, and Hoists (OSHA 29 CFR 1926.550 to 556)

1. Procedures for safe operation of overhead cranes, truck cranes and hoists.
2. Procedures for safe operation of material hoists, personnel hoists, and elevators.

Excavations (OSHA 29 CFR 1926.650 to 1926.652)

1. Procedures for safe excavation including the design of sloping, benching, support, and shield systems; site inspection; protection from water accumulation; and stability of adjacent structures.

Concrete and Masonry Construction (OSHA 29 CFR 1926.700 to 1926.706)

1. Procedures to protect employees from hazards associated with concrete and masonry operations.

2. Procedures for use of head and face protection when applying cement, sand, and water mixtures through a pneumatic hose.

Steel Erection (OSHA 29 CFR 1926.750 to 1926.753)

1. Procedures for safe erection of skeleton steel construction in tiered buildings, structural steel assembly, bolting, and riveting.

Demolition (OSHA 29 CFR 1926.850 to 1926.860)

1. Procedures for safe demolition of existing structures on MDC properties including contingencies to safely assess and manage potentially hazardous constituents such as asbestos and lead.

Stairways and Ladders (OSHA 29 CFR 1926.1050 to 1926.1060)

1. Procedures for the safe construction and use of stairways and ladders.

Hazardous Materials/Hazardous Waste

1. Procedures for storing and removing all hazardous materials and waste from MDC properties or job sites prior to completion of work.
   Note: Only authorized MDC personnel may sign manifests where MDC is generator of waste.

Work Zone Safety (OSHA 29 CFR 1926 subpart G)

1. All contract work performed on public roads where the work will interrupt the normal flow of traffic and/or present hazards to pedestrians, the contractor must have procedures in place for conforming to the Manual on Uniform Traffic Control Devices, Part 6 (MUTCD).

Fire Prevention and Protection

The contractor shall include in its safety and health plan an effective fire protection and prevention plan, including, but not limited to, provisions for the fire protection and suppression equipment, as set forth in this section.

A. Housekeeping. Good housekeeping, with provision for prompt removal and disposal of accumulations of combustible scrap and debris, shall be maintained in all areas of the jobsite. Self-closing metal containers shall be used for the disposal of waste saturated with flammable liquids.
B. Codes and regulations. The contractor shall comply with the requirements published in the current revisions of the National Electrical Code, National Electrical Safety Code, and the National Fire Protection Association standards.
C. Smoking. Smoking or other sources of ignition shall not be permitted in areas where flammable or explosive materials are used, stored or are present. All such areas shall be conspicuously posted: NO SMOKING OR OPEN FLAMES. There is a no smoking policy in effect in all MDC facilities except in designated areas.
D. Fires. Fires and open flame devices shall not be left unattended unless protected with automatic temperature control and cutoff devices.
E. Cleaning and degreasing. Gasoline and liquids with a flash point below 100 degrees Fahrenheit shall not be used for cleaning and degreasing.

Issues of Non-Compliance

If during the course of the contract, EH&S personnel observe a contractor's non-compliance with the contractor's contracted safety and health plan or the MDC safety and health requirements, EH&S personnel may bring it to the attention of the MDC Construction Engineer and may also document such non-compliance in writing. Failure to correct the violation or continued violations shall be grounds for termination of the contract.

If after notifying the Construction Engineer in writing of deficiencies in health, safety, or environmental requirements, EH&S personnel observe continued violations of those requirements, or observe actions that pose an imminent danger, an immediate order to stop work may be issued. The contractor will be solely responsible for any costs associated with the order to stop work until the deficiencies have been rectified. Should this occur, EH&S personnel will bring the matter to the attention of the MDC Construction Engineer, and the Manager of EH&S. Such deficiencies may result in the default of the contract or preclude contractor from performing future business with the MDC.

Any action taken by EH&S, MDC Construction Engineer or any other MDC personnel, including but not limited to observation, documentation and/or contract termination or suspension is not to be construed as undertaking a duty for initiating, maintaining, supervising or ensuring safety at the worksite of non-MDC employees.

Safety Training

The contractor shall ensure that its employees have completed appropriate health and safety training when required by statute* or regulation and/or by MDC requirements, and provide current documentation of such training when required by the contract.

**In compliance with Section 31-53b of the Connecticut General Statutes: " Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration". Per Section 31-53b-2(c) each employee must complete the course no earlier than five years before the commencement date of the public works project.*

Medical Clearance

The contractor shall ensure that its employees have appropriate medical clearance when required by governmental regulations or by MDC requirements. Copies of current medical clearance for contractor personnel are required to be presented as specified by the contract.

Incident Reporting

EH&S may participate with contractors in the investigation of incidents resulting in injury/illness and/or damage or loss of property and near misses.

Safety and Personal Protective Equipment

The contractor shall provide all necessary safety and personal protective equipment needed by its employees and as required per OSHA and ANSI regulations.

The contractor shall ensure that its employees have received appropriate training on the use and maintenance of safety and personal protective equipment prior to its use. The MDC shall not be responsible for the failure of non-MDC employees to correctly use appropriate safety equipment and any such failure to properly use safety equipment is a violation of the contract and may result in default of the contract.

Documentation

The contractor shall provide MDC with documentation, including but not limited to, required training, medical clearances, permits, material safety data sheets (MSDS) for its employees or operations at the pre-construction meeting. Where subcontractors are used, it is the responsibility of the contractor to provide this information to MDC.

CONTRACTOR SAFETY QUESTIONNAIRE
Attachment A

DATE: _____

COMPANY NAME _____

COMPANY TYPE (General Contractor, Mechanical, etc.): _____

ADDRESS: _____TELEPHONE NO.: _____

_____

_____

_____

RESOURCES

1. Name of company Health and Safety Contact: _____

   Title: _____

   Telephone No. of Health and Safety Contact: _____

2. What percent of this person's time is spent on Health and Safety related matters? _____%

3. How many other full-time Health and Safety representatives are employed by your company? _____

4. Name of Safety Representative proposed for this project? _____

   Title: _____

   What percent of this person's time will be spent on Health and Safety related matters? _____%
   Submit copy of Safety Representative's qualifications with completed questionnaire.

5. Does your company have a written procedure to ensure that adequate health and safety program resources, such as budget, equipment, training and manpower are included in each bid? If yes, submit a copy with completed questionnaire. _____

No.		Yes	No	Applicable Page No. in H&S Plan
1.	Does your company have a written Health and Safety Plan? If yes, submit a copy with your completed questionnaire. If the answer is no, the bid may be disqualified.	_____	_____	_____
2.	Does your company have a written program to ensure Health and Safety issues are preplanned into each project and work operation (e.g., job hazard analysis, checklists, etc.)? If yes, submit a copy with the completed questionnaire or reference page number in the Health and Safety Plan.	_____	_____	_____
3.	Does your company have a written safety incentive program that will be implemented on this project? If yes, submit a copy with the completed questionnaire or reference page number in the Health and Safety Plan.	_____	_____	_____
4.	Does your company have a written accident/incident procedure? If yes, submit a copy with the completed questionnaire or reference page number in the Health and Safety Plan.	_____	_____	_____
	Do your written procedures require near-miss incidents to be investigated?	_____	_____	_____
5.	Does you company have a written health and safety training program? If yes, submit a copy with the completed questionnaire or reference page number in the Health and Safety Plan. If the answer is no, the bid may be disqualified.	_____	_____	_____
	If yes, does the program include the following:			
	New employee/project orientation	_____	_____	_____
	Weekly "toolbox" meetings	_____	_____	_____
	Daily job briefings	_____	_____	_____
	Supervisor safety training	_____	_____	_____
	Task specific training	_____	_____	_____
	OSHA required training	_____	_____	_____
	Other	_____		

No.		Yes	No	Applicable Page No. in H&S Plan
6.	Does your company have a written procedure to ensure that only employees who are qualified by training and experience are allowed to operate equipment, tools, machinery and vehicles? If yes, submit a copy with the completed questionnaire or reference page number in the Health and Safety Plan.	_____	_____	_____
7.	Does your company designate and train competent people as required by the applicable OSHA standards (e.g., excavations, scaffold erection, etc.)?	_____	_____	_____
8.	Does your company have a written procedure to audit projects to ensure all projects are in compliance with applicable laws, requirements, etc.? If yes, submit a copy with the completed questionnaire or reference page number in the Health and Safety Plan.	_____	_____	_____
9.	Does your company have a written procedure to screen subcontractors based on their past safety performance? If yes, submit a copy with the completed questionnaire or reference page number in the Health and Safety Plan.	_____	_____	_____
10.	Does your company use a screening process to ensure employees are physically able to perform work as assigned? If yes, submit a copy with the completed questionnaire or reference page number in the Health and Safety Plan.	_____	_____	_____

DRUG FREE WORKPLACE PROGRAM

No.		Yes	No	Applicable Page No. in H&S Plan
1.	Does your company have a written drug free workplace program that includes drug testing? If yes, submit a copy with your completed questionnaire. If the answer is no, the bid may be disqualified.	_____	_____	_____

No.		Yes	No	Applicable Page No. in H&S Plan
2.	If the answer to question 1 is yes, does your written drug free workplace program include the following?	_____	_____	_____
	Pre-employment drug & alcohol testing	_____	_____	_____
	Post accident drug & alcohol testing	_____	_____	_____
	Reasonable suspicion drug & alcohol testing	_____	_____	_____
	Random drug & alcohol testing	_____	_____	_____
	Supervisor and employee training	_____	_____	_____

OSHA CITATIONS

No.		Yes	No
1.	Has your company received any OSHA citations (opened and closed) within the last three years?	_____	_____

2. If the answer to question 1 is yes, **how many of each** of the following types of citations have you received?

	Number
Serious	_____
Willful	_____
Repeat	_____
Other	_____
De minimus	_____

Give a brief description of the nature of the citation(s), or attach a copy of the citation(s).

_____

_____

ACCIDENT AND ILLNESS STATISTICS

		200_	200_	200_
1.	How many man-hours has your company worked in each of the last three years?	_____	_____	_____
2.	How many OSHA recordable injuries did your company experience in each of the last three years?	_____	_____	_____

3.	Based on the below listed formula (a), what are your incident rates for each of the last three years? If the rates are above the current national average, the bid may be disqualified.	_____	_____	_____
4.	How many lost time accidents has your company experienced in each of the last three years?	_____	_____	_____
5.	Based on the below listed formula (b), what is your lost workday case rate for each of the last three years? If the rates are above the current national average, the bid may be disqualified.	_____	_____	_____
6.	How many fatalities has your company experienced in each of the last three years?	_____	_____	_____
7.	Submit a copy of your OSHA 300 logs for the last three years with your completed questionnaire.			

(a) *Incident rate =* $\frac{\text{No. of OSHA recordable injuries} \times 200{,}000}{\text{Man-hours}}$

(b) *Lost workday case rate =* $\frac{\text{No. of lost time accidents} \times 200{,}000}{\text{Man-hours}}$

WORKERS' COMPENSATION EXPERIENCE MODIFICATION RATE

		200_	**200_**	**200_**
1.	List your company's Workers' Compensation Experience Modification Rate for each of the last three years. If most recent year has a rate greater than one, the bid may be disqualified.	_____	_____	_____
2.	SUBMIT, ON YOUR INSURANCE COMPANY LETTERHEAD, YOUR WORKERS' COMPENSATION EXPERIENCE MODIFICATION RATE FOR EACH OF THE LAST THREE YEARS WITH YOUR COMPLETED QUESTIONNAIRE.			

Is there any additional information you feel we need to properly evaluate your company's safety and health program? If yes, please explain below or attach additional sheets.

_____

_____

Name of Person Completing Questionnaire (Please Print):

Signature of Person Completing Questionnaire: _____

Title: _____ Date: _____

AUTHORIZATION

1. I have reviewed and authorized release of this information for confidential use by the Metropolitan District.

_____	_____
Printed or typed name	Signature
_____	_____
Title	Date

End of Section

00482A

SLBE Mandatory Subcontracting Forms

METROPOLITAN DISTRICT COMMISSION
SMALL LOCAL BUSINESS ENTERPRISE (SLBE) DEVELOPMENT PROGRAM
MANDATORY SUBCONTRACTING REQUIREMENTS

Name of Bidder (Proposer) _____

Address _____

Contract (Project) Title_____

Contract Number: _____

Bid Due Date: _____

Requirements: SLBE: _____% MLBE: _____%

THIS PACKAGE OF SLBE AND MLBE PARTICIPATION FORMS IS DUE WITH THE BID.

FOR MORE INFORMATION OR ASSISTANCE WITH THESE FORMS, CONTACT:

SLBE PROGRAM ADMINISTRATOR
Metropolitan District Commission
555 Main Street
PO Box 800
Hartford, Connecticut 06142-0800
Tel: (860) 278-7850
Fax: (860) 724-2679

PART A: SLBE PARTICIPATION DISCLOSURE FORM

Use this form to list SMALL LOCAL BUSINESS ENTERPRISES (SLBEs) that you will use to meet the SLBE Participation Requirements.

Prime Contractor's Name: _____

Prime Contractor's Address: _____

Contract Number & Title: _____

SLBE SUBCONTRACTORS

Name:	Certification Number	Expiration Date	$ Amount of Subcontract	% of Total Contract

TOTAL DOLLAR AMOUNT OF CONTRACT $ _____

TOTAL DOLLAR AMOUNT OF SLBE SUBCONTRACTS $_____

TOTAL SLBE PERCENTAGE OF ENTIRE CONTRACT _____%

Form Prepared by:

_____

Name and Title Phone # Date

(If necessary, make additional copies of this page. Each additional page must be signed and dated.)

PART C: SLBE / MLBE AND PRIME CONTRACTOR'S STATEMENT OF INTENT

COMPLETE A SEPARATE FORM FOR EACH AND EVERY SLBE AND MLBE NAMED IN PART B OR BID WILL BE CONSIDERED NON-REPONSIVE.

Contract Name and Number: _____

Name of Prime Contractor: _____

Name of SLBE or MLBE: _____

SLBE or MLBE Certification Number: _____

Work / Service to be performed by the SLBE or MLBE:

_____

_____

_____

Materials / Supplies to be furnished by SLBE or MLBE:

_____

_____

_____

Subcontract Amount: $_____ (If this is a requirements contract, the subcontract dollar amount may be omitted.)

Subcontract percentage of total contract: _____%

The undersigned Prime Contractor and subcontractor agree to enter into a contract for the work/service indicated above for the dollar amount or percentage indicated to meet the SLBE/MLBE participation goals, subject to the prime contractor's execution of a contract with the Metropolitan District Commission for the above-referenced contract number. The undersigned subcontractor is currently certified as an small business contractor by the State of Connecticut Department of Administrative Services, as a disadvantaged business by the State of Connecticut Department of Transportation, or as a Micro Local Business Enterprise (MLBE) by the Metropolitan District Commission.

_____ _____

Signature of Prime Contractor (**REQUIRED**) Date

_____ _____

Signature of SLBE or MLBE (**REQUIRED**) Date

PART D: SLBE/MLBE PARTICIPATION CERTIFICATION

The Undersigned authorized representative of Contractor does hereby certifies:

Contractor acknowledges the SLBE goal of _____% and the MLBE goal of_____% for Contract No./Title_____ with the Metropolitan District Commission.

My firm will make good faith efforts to achieve the SLBE and MLBE participation goals for this contract. I understand that, if awarded the contract, my firm must submit to the Administrator of the MDC's Small Local Business Enterprise (SLBE) Development Program ("the Administrator") copies of all executed agreements with the SLBE and MLBE firms being utilized to achieve the participation goals established by the Administrator.

I understand that these documents must be submitted prior to the issuance of a notice to proceed. I understand that, if awarded the contract, my firm must submit to the Administrator canceled checks and any other documentation and reports required by the Administrator on a quarterly basis, verifying payments to the SLBE and MLBE firms utilized on the contract.

I understand that, if I am awarded this contract and I find that I am unable to utilize the SLBEs or MLBEs identified in my Statements of Intent, I must substitute other SLBE and MLBE firms to meet the participation goals. I understand that I may not make a substitution until I have obtained the written approval of the Administrator.

I understand that, if awarded this contract, authorized representatives of the Metropolitan District Commission may examine, from time to time, the books, records and files of my firm to the extent that such material is relevant to a determination of whether my firm is complying with the SLBE and MLBE participation requirements of this contract. Certify that the foregoing information is true and correct to the best of my knowledge, information and belief, and that the failure to comply with this certification may be grounds for debarment from MDC contracting or other penalties to be imposed in the sole discretion of the SLBE Program Administrator.

_____	_____
Contractor Company Name	Signature
_____	_____
Address	Print Name and Title

PART E: SLBE/MLBE PARTICIPATION WAIVER REQUEST FORM

BIDDER MUST COMPLETE THIS FORM IN ORDER TO REQUEST A WAIVER FROM MANDATORY SLBE / MLBE SUBCONTRACTING REQUIREMENTS.

Name of Bidder (Proposer) _____

Address _____

Contract (Project) Title _____

Contract Number: _____

Bid Due

Goals on this contract: _____% SLBE _____% MLBE

I have achieved _____% SLBE _____% MLBE

I am requesting a waiver of _____ % SLBE _____% MLBE

I have contacted the SLBE Administrator for assistance: _____Yes _____ No

Number of SLBE firms contacted: _____ (Attach a list of names)

Number of MLBE firms contacted: _____ (Attach a list of names)

Explain why waiver is being requested: Attach documentation of your good faith efforts to secure, contact and negotiate with MBEs and WBEs, including:

(1) the reasons your company is unable to secure sufficient SLBE/MLBE participation to meet the stated goals.

(2) The efforts made by your company to select portions of the contract to be performed by SLBEs and MLBEs

(3) For each SLBE or MLBE that placed a bid that you consider to be unacceptable, a statement that explains the basis for that conclusion.

WAIVER REQUESTS WILL BE EVALUATED BASED ON THE ATTACHED POINT VALUE SYSTEM FOR DETERMINING WHETHER THE REQUESTING CONTRACTOR HAS MADE SUFFICIENT GOOD FAITH EFFORTS TO MEET THE MANDATORY SUBCONTRACTING REQUIREMENTS FOR THE CONTRACT.

_____ _____

Signature of Authorized Company Representative Date

PART F: SUBCONTRACTOR UTILIZATION FORM

THIS FORM MUST BE INCLUDED WITH REQUEST FOR FINAL PAYMENT.

Prime Contractor's Name: _____
Contract Title: _____
Contract Number: _____
Total Contract Dollar Amount: _____

Provide the following information for EACH AND EVERY subcontractor, both SLBE / MLBE and NON-SLBE / MLBE used on this contract. (Duplicate form if necessary.)

Name of Subcontractor	Goods or services on subcontract
(Circle One) SLBE / MLBE	Dollar amount of subcontract
Dollar amount paid to date	If amount is less than subcontract dollar amount, explain why.

Name of Subcontractor	Goods or services on subcontract
(Circle One) SLBE / MLBE	Dollar amount of subcontract
Dollar amount paid to date	If amount is less than subcontract dollar amount, explain why.

Name of Subcontractor	Goods or services on subcontract
(Circle One) SLBE / MLBE	Dollar amount of subcontract
Dollar amount paid to date	If amount is less than subcontract dollar amount, explain why.

_____ _____
Prime Contractor's Signature Date

00482B

Mandatory Subcontractor Waiver Requirements
(Good Faith Efforts)

GOOD FAITH EFFORTS

To be eligible for a waiver, prime contractors must submit proof that "good faith efforts" were made to subcontract with eligible SLBEs. Whether the prime contractor has made sufficient "good faith efforts" will be determined based on a numerical score calculated according the following criteria.

Failure to achieve a minimum of 80 out of 100 points will result in a denial of the prime contractor's waiver. Indicator points are awarded on a pass/fail basis, i.e., either full or zero points can be achieved for compliance with each item as set forth below:

Indicator	Points
1. Pre-Bid Meeting attendance	5 Points
2. Identification of sufficient subcontracting work	10 Points
3. Broad-based advertisement	10 Points
4. Written notice to subcontractors	10 Points
5. Follow-up to initial solicitations	10 Points
6. Provision of plans, specifications and requirements	10 Points
7. Request for assistance form recruitment/placement agencies	10 Points
8. Documentation of subcontractor negotiation	25 Points
9. Assistance with bonds, credit lines and insurance	10 Points
POSSIBLE TOTAL	100 Points

1. Pre-Bid Meeting attendance 5 Points

Bidder attended pre-bid meeting scheduled by the MDC to inform all bidders of requirements for subject project.

Required documentation: a) Attend pre-bid meeting and be listed on attendance sheet; or b) Submit letter requesting waiver prior to pre-bid meeting.

3. Identification of sufficient subcontracting work 10 Points

Bidder identification and selected specific work items in subject project to be performed by sub-bidders. Bidder subdivided total contract work requirements into smaller portions or quantities to permit maximum active participation.

Required documentation: Content of advertisements and written notices to subcontractors will demonstrate compliance with this objective.

4. Broad-based advertisement 10 Points

Not less than ten (10) calendar days prior to bid submittal, bidder conducted an advertising campaign designed to reach all segments of the eight member towns of the MDC by advertising in newspapers, trade association publications, special interest publications, trade journals, community papers or other media. Advertisements must be specific to the project, not generic, and may not be a plan holder advertisement provided by the publication. Advertisements shall be published on at least three (3) separate days in newspapers of general circulation; one of the newspapers selected shall be of daily circulation. Advertisements must be worded to ensure it does not exclude or limit the number of potential respondents and must include:

MDC's project name;
Name of bidder;
Areas of work available for subcontracting;
Contact person's name and phone number;
Information on availability of plans and specifications;
Bidder's policy concerning assistance to subcontractors in obtaining bonds and credit lines and/or insurance

Required documentation: Submit copies of advertisements and proof of publication dates.

5. Written notice to subcontractors 10 Points

Not less than ten (10) calendar days prior to bid submittal, bidder provided written notice of its interest in receiving sub-bids on subject contract from SLBE or MLBE (depending on the nature of the subcontracting requirements) business enterprises with an interest in performance of identified work items. Contents of letters must include:

- ☐ MDC's project name;
- ☐ Name of bidder;
- ☐ Areas of work available for subcontracting;
- ☐ Contact person's name and phone number;
- ☐ Information on availability of plans and specifications; and
- ☐ Bidder's policy concerning assistance to subcontractors in obtaining bonds, credit lines and/or insurance.

Required documentation: Submit copy of each letter sent to subcontractors for each item of work to be performed. If only one master notification, submit letter with list of recipients. Faxed copies must include fax transmittal confirmation slip showing date and time of transmission. Mailed letters must include copies of metered envelopes or certified mail receipts.

6. Follow-up to initial solicitations 10 Points

Bidder followed up initial solicitations of written notice to subcontractors to determine interest in specific portions of project work, answered questions, recorded phone quotes, and recorded subcontractor's interest in bidding on any portion of subject project.

Required documentation: Submit copy of telephone logs including name of caller, name of company called, phone number, contact person, time, date, and result of conversation. Telephone logs must be submitted to demonstrate follow-up with all contractors to whom written notices were sent. It is recommended that the bidder provide a spreadsheet showing each sub-bidder contact required above.

7. Provisions of plans, specifications, and requirements 10 Points

Bidder provided interested sub-bidders with access to plans, specifications, and requirements for subject project.

Required documentation: Content of advertisements and written notices to subcontractors will demonstrate compliance with this Indicator.

8. Request for assistance from recruitment/placement agencies (i.e. state, federal and municipal databases and/or business centers having lists of clients such as HUB Zone, DOT, or DAS). 10 Points

Not less than fifteen (15) calendar days prior to bid submittal, bidder requested and retained assistance from different agencies that recruit and place subcontractors. Other organizations and trade associations that promote subcontractor participation may also be contacted.

Required documentation: Submit copy of each letter sent to outreach agencies requesting assistance in recruiting subcontractors. Faxed copies must include fax transmittal confirmation slip showing date and time of transmission. Mailed letters must include copies of metered envelopes or certified mail receipts. Content of letters must include the MDC's project name, name of bidder, and contact person's name and phone number.

9. Documentation of subcontractor negotiation 25 Points

Bidder negotiated in good faith with interested subcontractors and has rejected no bid for other than legitimate business reasons.

Required documentation: Submit a) Provide written documentation of all subcontractor bids or quotes received, including the bid or quote amount, the date obtained and the name and the telephone number of the person providing the bid or quote amount; b) Summary sheet organized by work type listing subcontractor company names with bid amounts for each work

type; and (c) a notarized statement from the owner or a principal of the bidder stating that the bidder does not hold a financial interest in, does not have ownership of or a controlling interest in or is not significantly involved in the operation of the subcontractor. Identify selected subcontractor for each work type. If bidder elects to use own forces to perform a work type, include bid to show own costs for the work.

10. Assistance with bonds, credit lines, and insurance 10 Points

Bidder made efforts to advise and assist interested subcontractors in obtaining bonds, credit lines, and insurance required for subject project.

Required documentation: Content of advertisements (Indicator 4) and written notices to subcontractors (Indicator 5) will determine compliance with this objective.

SECTION 00485 – LIST OF SUBCONTRACTORS

SUBCONTRACTORS:

Include names of subcontractors, including type of work.

List of Subcontractors must include all subcontractors to be used for work included in the Contract Documents, and with contract values $25,000 or greater. Also note that all MBE/WBE subcontractors must be listed; however, this is not required to be part of the bid submission, but shall be provided as an update in accordance with Article 1.6 of the Instruction to Bidders.

[Add additional pages as necessary.]

NAME	ADDRESS	PHONE #	TYPE OF WORK/SPEC SECTION	ESTIMATED(1) VALUE OF WORK ($)	MBE/WBE

‘(1) Refer to Article SC-6.06 in the Supplementary Conditions

NAME	ADDRESS	PHONE #	TYPE OF WORK/SPEC SECTION	ESTIMATED[1] VALUE OF WORK ($)	MBE/WBE

‘(1) Refer to Article SC-6.06 in the Supplementary Conditions

SECTION 00485 - B
NAMED SUBCONTRACTOR
BIDDER'S QUALIFICATION STATEMENT
MUST BE SUBMITTED WITH THIS FORM

(This form shall be submitted for any Subcontractor Agreement of $25,000 or greater)

If a question or request for information does not pertain to your organization in any way, use the symbol "NA" (Not Applicable). Use additional 8 ½" x 11" sheets with your letterhead as necessary.

1. Indicate exactly the name by which this organization is known, legal address, telephone, value of the this Subcontractor Agreement and the Section / Sections of the Technical Specifications applicable to the Subcontractor Agreement :

   Name: _____

   Address: _____

   Subcontractor Agreement Value _____

   Describe Subcontractor's work and include the references to the technical specifications Sections: _____

2. How many years has this organization been in business under its present business name?

   Years: _____

3. How many years has this organization been in business as a Subcontractor?

   Years: _____

4. If this organization has not always been a Subcontractor, list the trade(s) that your firm customarily performed prior to the time that you became a Subcontractor:

   4.1 _____

4.2 _____

4.3 _____

5. Indicate all other names by which this organization has been known and the length of time known by each name:

5.1 _____

5.2 _____

5.3 _____

6. This firm is a:

Corporation ☐
Partnership ☐
Sole Proprietorship ☐
Joint Venture ☐
Other _____

7. Attach resumes of all supervisory personnel, such as Principals, Project Managers, and Superintendents, who will be directly involved with the project on which you are now a bidder. Indicate the number of years of construction experience and number of years of which they were in a Supervisory capacity.

8. List all sub-trades which your firm customarily performs with own employees – **this table must be completed for electrical and mechanical trades for all projects, and also for all named trades for threshold projects**. Include also the following licenses if applicable to the Subcontractor Agreement:

Unlimited plumbing-piping contractor's license (P-1)

Unlimited plumbing-piping journeyperson's license (P-2)

Plumbing & Piping Limited Contractor (P-7)

Licensed Land Surveyor (Sec 20-300-1)

Limited Electrical Contractor

Limited Electrical Journeyperson

Trade		**Name of License holder**	**State of CT D.C.P. License/Registration No. Format: Prefix-Number-Suffix**
8.1			
8.2			
8.3			
8.4			
8.5			

9. **Trade References:** Names, addresses and telephone numbers of several firms with whom your organization has regular business dealings (attach separate sheets as necessary):

10. **All** Construction Projects your organization has **in process** (attach separate sheets using the following format as necessary):

10.1 Specific Title & Location: _____

10.2 Contract Amount: _____

10.3 Description of your scope of work performed: _____

10.4 Owner: _____

10.5 General Contractor: _____

10.6 Designer: _____

10.7 Start Date: _____

10.8 Finish Date: _____

***10.9** Any complaint on Quality or Management: _____

10.10 Owners Representative: _____ (Name) _____ Telephone Number

10.11 G.C. Representative: _____ (Name) _____ Telephone Number

***Please attach a separate sheet explaining any negative entry in this row.**

11. All Construction Projects your organization has **completed** in the past five years or the 20 projects most recently completed (attach separate sheets using the following format as necessary):

11.1 Specific Title & Location: _____

11.2 Contract Amount: _____

11.3 Description of your scope of work performed: _____

11.4 Owner: _____

11.5 General Contractor: _____

11.6 Designer: _____

11.7 Start Date: _____

11.8 Finish Date: _____

***11.9** Any complaint on Quality or Management: _____

11.10 Owners Representative: _____ (Name) _____ Telephone Number

11.11 G.C. Representative: _____ (Name) _____ Telephone Number

***Please attach a separate sheet explaining any negative entry in this row.**

12. Has your organization ever failed to complete a contract, or has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a contract? If so, indicate the circumstances leading to the project failure and the name of the company which provided the bonding for the failed contract(s):

_____

_____

_____

13. List all legal or administrative proceedings currently pending or concluded adversely within the last five years which relate to procurement or performance of any public or private construction contracts. (Exclude OSHA violations which are called for elsewhere in this statement).

13.1 Attached: ☐

13.2 N/A: ☐

14. List all willful or serious violations of any Occupational Safety and Health Act (OSHA) or of any standard, order or regulation promulgated pursuant to such act, during the three year period preceding the bid, provided such violations were cited in accordance with the provisions of any State Occupational Safety and Health Act or Occupational Safety and Health Act of 1970. Indicate whether these were abated within the time fixed by the citation or whether the citation was appealed. If appealed what is the status or disposition.

14.1

14.2

14.3

15. Has your organization had any criminal convictions related to the injury or death of any employee in the three-year period preceding the bid. Please list any such convictions below.

15.1

15.2

15.3

Dated at _____

Signed this _____ day of _____ , 20 _____

Name of Organization: _____

_____

_____

Signature _____

(Print Name) _____

Title _____

Notary Statement:

Mr./Mrs./Ms. _____ being duly sworn

deposes and says that he/she is the _____ of
(Position or Title)

_____ , and that the answers to the foregoing
(Firm Name)

questions and all statements therein contained are true and correct.

Subscribed and sworn before me this _____ day of _____ , 20 _____

Notary Public _____

My Commission Expires _____ , 20 _____

This form must be submitted for each of the Named Subcontractors and attached to the Bid Submission.

END OF BIDDER'S QUALIFICATION STATEMENT FORM

SECTION 485 C

CONTRACTOR'S LICENSING

Regulations of Connecticut State Agencies, Title 20: Professional Licenses, Department of Consumer Protection (4) Occupational Licenses, Sec. 20-332 Require certain trades to be licensed while performing work on State Projects as follows:

- Unlimited plumbing-piping contractor's license (P-1)
- Unlimited plumbing-piping journeyperson's license (P-2)
- Plumbing & Piping Limited Contractor (P-7)
- Licensed Land Surveyor (Sec 20-300-1)
- Limited Electrical Contractor
- Limited Electrical Journeyperson

Contractors are advised to check the current State of Connecticut regulations before submitting their bids. The Contractor shall submit with its Bid a list of licensed trades that will be used to perform the Work in accordance with Article 1.6 of Section 00100. The list shall include the Name and the Address of each licensee, the Effective and Expiration Date of each License and the license number. This list shall include all the licenses of general contractor and subcontractors regardless of contracted amount. Photo copies of all licenses shall be provided with the Bid.

THE METROPOLITAN DISTRICT

MAPLE AVENUE SANITARY SEWER REPLACEMENT AND REHABILITATION WINDSOR, CONNECTICUT

CONTRACT NUMBER 2013-04

AGREEMENT

THIS AGREEMENT made as of the _____ day of _____ in the year 2013 by and

between The Metropolitan District, a municipal Corporation having an office at 555 Main Street, Hartford, Connecticut, hereinafter called Owner, acting through its Chief Executive Officer, and _____

with legal address and principal place of business at _____ _____ hereinafter called Contractor. Owner and Contractor in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

1.1 Contractor shall perform the Work as specified or indicated in the Contract Documents. The Work is as described in SECTION 01010.

ARTICLE 2. ENGINEER.

2.1 The Project has been designed by A.I. Engineers, Inc. Unless advised otherwise, the MDC will act as Engineer in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIME.

3.1 The Contract Time shall be **68 Calendar Days** commencing on the Effective Date advised in writing by the MDC.

3.2 Contractor agrees that the Work shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract Time stated above. It is expressly understood and agreed, by and between Contractor and Owner that the Contract Time is reasonable for the completion of the Work, taking into consideration the average climatic range, and usual industrial conditions prevailing in this locality. The Contractor may continue performing the Work during the winter months from December 15th to March 31st only if approved by the agency /department / bureau responsible to issue the excavation permit (City / Town / State). However, the Contractor shall not be entitled to cost reimbursement for labor, equipment and materials including overhead, loss of productivity caused by adverse weather conditions, transportation delays, additional cost for materials to protect the work and any other incurred costs if the Work is implemented during the winter months. It is expressly understood and agreed, by and between Contractor and Owner that working during the winter months is the Contractor's choice when approved by the City / Town / State and that this approval for work during the winter months may be revoked by the City / Town / State at any time during the winter months without any compensation for the Contractor by the City / Town / State or the Owner. The Owner reserves its right to stop the construction during the winter month

for public safety issues or if the work is not performed in accordance with the Standards without any compensation related to the shutdown for the Contractor by the Owner.

3.3 The Contractor shall not be entitled to costs for delay due to Owner ordered Modifications or any other circumstances for the period of time between the Contractor's elected early completion and the end of the Contract Time. Such costs include, but are not limited to, extended home office costs, field office costs, or supervisory and management costs incurred in performance of the Work. Early completion of the Work shall not merit additional compensation.

ARTICLE 4. CONTRACT PRICE.

4.1 Owner will pay Contractor for performance of the Work in accordance with the Contract Documents in current funds at the unit price agreed upon in the Contractor's Bid Form a copy of which Bid Form is included as Section 00300 of the Contract Documents.

ARTICLE 5. APPLICATIONS FOR PAYMENT

5.1 Contractor shall submit Applications for Payment in accordance with Article 14 of the Standard General Conditions of the Construction Contract which are a part of the Contract Documents (the "Standard General Conditions"). Applications for Payment will be processed by Engineer as provided in the Standard General Conditions.

ARTICLE 6. PROGRESS AND FINAL PAYMENTS

6.1 Owner will make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment as approved and recommended by Engineer, monthly during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values provided for in Paragraph 14.01 of the Standard General Conditions.

6.2 Prior to the Work being less than 50 percent complete, progress payments will be in an amount equal to 95 percent of the value of the Work completed, less, the aggregate of payments previously made. At the time that the Work is 50 % complete, provided the Contractor is making satisfactory progress, the percentage of progress payments previously retained shall be reduced from 5 percent to 2 percent and, until such time as Substantial Completion of the Work is achieved, further progress payments shall be in an amount equal to 98 percent of the value of the Work completed, less, the aggregate of payments previously made. Note that satisfactory progress will be determined, in part, on the Contractor in-progress 50 % Completion Evaluation.

6.3 Upon Substantial Completion of the Work, the percentage of progress payments previously retained by the Owner, and retained in the future from further progress payments, shall be reduced to only that amount necessary to assure completion of the Work. Owner will pay to the Contractor the amount sufficient to increase total payments to Contractor to 98 percent of the Contract Price, less retainages as Engineer shall determine, in accordance with Paragraph 14.02. of the Standard General Conditions.

6.4 Notwithstanding the provisions of Section 6.2 and 6.3, if the Owner determines, in its discretion, that the Contractor is not making satisfactory progress on the Work or there is other specific cause, the Owner may reinstate the retention from progress payments up to 5 percent.

6.5 Upon final inspection and acceptance of the Work, in accordance with Paragraph 14.07. of the Standard General Conditions, Owner will pay the remainder of the Contract Price as recommended by Engineer.

ARTICLE 7. LIQUIDATED DAMAGES

7.1 Owner and Contractor recognize that TIME IS OF THE ESSENCE of this Agreement and further, that Owner will suffer financial loss if the Work is not completed within the Contract Time specified in Article 3 above, plus any extensions thereof allowed in accordance with Article 12 of the Standard General Conditions. The parties hereto 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 $1,800 per day for each calendar day of delay beyond the last day of the Contract Time (as it may be extended in accordance with the Contract Documents) that the Work is not fully complete.

7.2 Provided, that Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is for reasons included in Paragraph 12.03 A of the Standard General Conditions.

7.3 Provided, further that Contractor shall submit the required notification of Contractor's claim for such delays in accordance with Paragraph 12.02 of the Standard General Conditions.

ARTICLE 8. ASSURANCE

8.1 Contractor has familiarized itself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.

8.2 Contractor has made or caused to be made examinations, investigations and tests and studies of such reports and related data as Contractor deems necessary for the performance of the Work at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are or will be required for such purposes.

8.3 Contractor has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.

8.4 Contractor has given Engineer written notice of any conflict, error or discrepancy that Contractor has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Contractor.

8.5 Contractor agrees that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work in accordance with the Contract Documents.

8.6 In accordance with Section 215 of the Clean Water Act, and implementing EPA regulations and guidelines, Contractor agrees that preference will be given to domestic construction material by Contractor, subcontractors, material men and suppliers in the performance of the Work.

ARTICLE 9. CONTRACT DOCUMENTS.

9.1 The Contract Documents which comprise the Contract between Owner and Contractor are attached hereto and made a part hereof and consist of the following:

9.1.1 Invitation To Bid.

9.1.2 Instructions To Bidders.

9.1.3 Bid Form.

9.1.4 This Agreement.

9.1.5 Performance Bond, EJCDC Document C-610, 2007 edition, Payment Bond, EJCDC Document C-615, 2007 edition, and other required Bonds.

9.1.6 Certificate of Insurance.

9.1.7 General Conditions, EJCDC Document No. C-700, 2007 edition.

9.1.8 Supplementary Conditions Parts I and II.

9.1.9 Specifications (as listed in Table of Contents).

9.1.10 Drawings dated FEBRUARY 2013, enumerated as follows:

Drawing No.	Description
COVER	DRAWING COVER SHEET
2	GENERAL NOTES, ABBREVIATIONS AND LEGEND FOR SANITARY SEWER
3	PLAN AND PROFILE FOR SANITARY SEWER - 1
4	PLAN AND PROFILE FOR SANITARY SEWER - 2
5	PLAN AND PROFILE FOR SANITARY SEWER - 3
6	DETAILS FOR SANITARY SEWER - 1
7	DETAILS FOR SANITARY SEWER - 2
8	DETAILS FOR SANITARY SEWER - 3
9	TRAFFIC MANAGEMENT PLAN -1
10	TRAFFIC MANAGEMENT PLAN -2
11	TRAFFIC MANAGEMENT PLAN -3
12	TRAFFIC MANAGEMENT PLAN -4
13	TRAFFIC MANAGEMENT PLAN -5
14	TRAFFIC MANAGEMENT PLAN -6
15	TRAFFIC DETAILS - 1
16	TRAFFIC DETAILS - 2

9.1.11 Addenda numbers _____ to _____, inclusive.

9.1.12 Any modification, including Change Orders, duly delivered after execution of Agreement.

ARTICLE 10. MISCELLANEOUS

10.1 Terms used in this Agreement which are defined in Article 1 of the Standard General Conditions shall have the meanings set forth in the Standard General Conditions.

10.2 Neither Owner nor Contractor shall, without the prior written consent of the other, assign or sublet in whole or in part any interest under any of the Contract Documents; and, specifically but without limitation, Contractor shall not assign any monies due or to become due without the prior written consent of Owner. In case Contractor assigns all or any part of any monies due or to become due under the Contract Documents, the instrument of assignment shall contain a clause substantially to the effect that it

is agreed that the right of the assignee in and to any monies due or to become due to Contractor shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in the Contract Documents.

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

10.4 The Contract Documents constitute the entire agreement between Owner and Contractor and may only be altered, amended or repealed by written agreement signed by both Owner and Contractor.

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

This Agreement shall become effective on _____, 2013.

THE METROPOLITAN DISTRICT	CONTRACTOR
_____	_____
BY	BY
_____	_____
(CORPORATE SEAL)	(CORPORATE SEAL)
Attest	Attest
_____	_____
Address for giving notices	Address for giving notices
_____	_____
_____	_____

Note: If Contractor is a corporation, an affidavit giving the principal the right to sign the Agreement must accompany the executed Agreement.

Approved as to Form and Content:

_____

R. Bartley Halloran
District Counsel

DOCUMENT 00600 BONDS AND CERTIFICATES

TABLE OF CONTENTS

00610 PERFORMANCE BOND (attached)

00615 PAYMENT BONDS (attached)

00630 INSURANCE CERTIFICATE
(Submit on Metropolitan District's Standard Form INS390 upon award of Contract.)

PERFORMANCE BOND

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

CONTRACTOR (*Name and Address*):

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

OWNER (*Name and Address*):

CONTRACT
Effective Date of Agreement:
Amount:
Description (*Name and Location*):

BOND
Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

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

_____ (Seal)
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

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

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

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.

2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
   - 2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
   - 2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
   - 2.3 Owner has agreed to pay the Balance of the Contract Price to:
     1. Surety in accordance with the terms of the Contract; or
     2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.

3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:

   - 3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
   - 3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
   - 3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
   - 3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
     1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
     2. Deny liability in whole or in part and notify Owner citing reasons therefor.

4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the 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 Owner or its heirs, executors, administrators, or successors.

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

8. 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 Contractor Default or within two years after Contractor ceased working or within two years after 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 period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

9. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

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

11. Definitions.

11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address and Telephone*) Surety Agency or Broker: Owner's Representative (*Engineer or other party*):

PAYMENT BOND

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

CONTRACTOR (*Name and Address*):

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

OWNER (*Name and Address*):

CONTRACT
Effective Date of Agreement:
Amount:
Description *(Name and Location)*:

BOND
Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

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

_____
Title

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

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

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:

2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2 Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

4.1 Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2 Claimants who do not have a direct contract with Contractor:

1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
3. Not having been paid within the above 30 days, have sent a written notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

6.1 Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

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

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, 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 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.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

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

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. Definitions

15.1 Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and 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.

15.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract, or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address, and Telephone*) Surety Agency or Broker: Owner's Representative (*Engineer or other*):

INS390

INSURED	THIS IS TO CERTIFY THAT THE POLICIES LISTED BELOW HAVE BEEN ISSUED, SUBJECT TO APPLICABLE TERMS, CONDITIONS AND EXCLUSIONS. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES INDICATED BELOW.
	COMPANIES AFFORDING COVERAGE
PRODUCER	COMPANY LETTER A
	COMPANY LETTER B
	COMPANY LETTER C

MINIMUM INSURANCE REQUIREMENTS
BODILY INJURY AND PROPERTY DAMAGE
$1,000,000 EACH OCCURRENCE
$1,000,000 AGGREGATE

(NOTE: CERTAIN PROJECTS, CONTRACTS OR AGREEMENTS MAY REQUIRE HIGHER OR LOWER LIMITS AND/OR REQUIRE SPECIFIC ADDITIONAL INSURANCE COVERAGES. SEE PROJECT, CONTRACT OR AGREEMENT FOR ADDITIONAL INFORMATION.)

COVERAGES

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	EFF. DATE (MM/DD/YY)	EXP. DATE (MM/DD/YY)	ALL LIMITS IN THOUSANDS	
	GENERAL LIABILITY				EACH OCCURRENCE	$
	____ COMMERCIAL GENERAL LIABILITY				GENERAL AGGREGATE	$
	____ CLAIMS MADE ___ OCCUR.				PRODUCTS COMP/OPS AGGREGATE	$
	____ PER PROJECT AGG. LIMIT END.					
	____ BLANKET CONTRACTUAL				SELF-INSURED RETENTION	$
	____ THE METROPOLITAN DISTRICT AND THE STATE OF CONN. ADDED AS ADDITIONAL INSURED					
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT	$
	____ ANY AUTO					
	____ ALL OWNED AUTOS				BODILY INJURY (Per Person)	$
	____ SCHEDULED AUTOS				BODILY INJURY (Per Accident)	$
	____ HIRED AUTOS				PROPERTY DAMAGE	$
	____ NON-OWNED AUTOS				SELF-INSURED RETENTION	$
	EXCESS/UMBRELLA LIABILITY				EACH OCCURR. $	AGGREGATE $
	WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY	
					$ (EACH ACCIDENT)	
					$ (DISEASE-POLICY LIMIT)	
					$ (DISEASE-EACH EMPLOYEE)	
	PROTECTIVE LIABILITY				BODILY INJURY & PROPERTY DAMAGE	
	(IN THE NAME OF THE METROPOLITAN DISTRICT) POLICY MUST BE SUBMITTED.				EACH OCCURRENCE:	
					AGGREGATE:	
	OTHER					

DESCRIPTION OF OPERATIONS

CERTIFICATE HOLDER	
THE METROPOLITAN DISTRICT 555 MAIN STREET-PO BOX 800 HARTFORD, CT 06142-0800	IT IS AGREED THAT 30 DAYS' NOTICE OF CANCELLATION OR RESTRICTIVE AMENDMENT OF SAID POLICIES SHALL BE MAILED TO THE METROPOLITAN DISTRICT, AND IT IS FURTHER AGREED THAT ALL EARNED PREMIUM CHARGES FOR THE PROTECTIVE LIABILITY AND OTHER POLICIES WILL BE BILLED TO THE ABOVE NAMED PERSON OR FIRM. AUTHORIZED REPRESENTATIVE

2013-04 00630-1

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

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and

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Endorsed by

CONSTRUCTION SPECIFICATIONS INSTITUTE

EJCDC C-700 Standard General Conditions of the Construction Contract
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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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1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

Associated General Contractors of America
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

Page

Article 1 – Definitions and Terminology 1
1.01 Defined Terms 1
1.02 Terminology 5

Article 2 – Preliminary Matters 6
2.01 Delivery of Bonds and Evidence of Insurance 6
2.02 Copies of Documents 6
2.03 Commencement of Contract Times; Notice to Proceed 6
2.04 Starting the Work 7
2.05 Before Starting Construction 7
2.06 Preconstruction Conference; Designation of Authorized Representatives 7
2.07 Initial Acceptance of Schedules 7

Article 3 – Contract Documents: Intent, Amending, Reuse 8
3.01 Intent 8
3.02 Reference Standards 8
3.03 Reporting and Resolving Discrepancies 9
3.04 Amending and Supplementing Contract Documents 9
3.05 Reuse of Documents 10
3.06 Electronic Data 10

Article 4 – Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions; Reference Points 11
4.01 Availability of Lands 11
4.02 Subsurface and Physical Conditions 11
4.03 Differing Subsurface or Physical Conditions 12
4.04 Underground Facilities 13
4.05 Reference Points 14
4.06 Hazardous Environmental Condition at Site 14

Article 5 – Bonds and Insurance 16
5.01 Performance, Payment, and Other Bonds 16
5.02 Licensed Sureties and Insurers 16
5.03 Certificates of Insurance 17
5.04 Contractor's Insurance 17
5.05 Owner's Liability Insurance 19
5.06 Property Insurance 19
5.07 Waiver of Rights 20
5.08 Receipt and Application of Insurance Proceeds 21

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5.09 Acceptance of Bonds and Insurance; Option to Replace 21
5.10 Partial Utilization, Acknowledgment of Property Insurer 22

Article 6 – Contractor's Responsibilities 22
6.01 Supervision and Superintendence 22
6.02 Labor; Working Hours 22
6.03 Services, Materials, and Equipment 22
6.04 Progress Schedule 23
6.05 Substitutes and "Or-Equals" 23
6.06 Concerning Subcontractors, Suppliers, and Others 25
6.07 Patent Fees and Royalties 27
6.08 Permits 27
6.09 Laws and Regulations 28
6.10 Taxes 28
6.11 Use of Site and Other Areas 28
6.12 Record Documents 29
6.13 Safety and Protection 29
6.14 Safety Representative 30
6.15 Hazard Communication Programs 30
6.16 Emergencies 30
6.17 Shop Drawings and Samples 31
6.18 Continuing the Work 32
6.19 Contractor's General Warranty and Guarantee 33
6.20 Indemnification 33
6.21 Delegation of Professional Design Services 34

Article 7 – Other Work at the Site 35
7.01 Related Work at Site 35
7.02 Coordination 35
7.03 Legal Relationships 36

Article 8 – Owner's Responsibilities 36
8.01 Communications to Contractor 36
8.02 Replacement of Engineer 36
8.03 Furnish Data 36
8.04 Pay When Due 36
8.05 Lands and Easements; Reports and Tests 36
8.06 Insurance 36
8.07 Change Orders 37
8.08 Inspections, Tests, and Approvals 37
8.09 Limitations on Owner's Responsibilities 37
8.10 Undisclosed Hazardous Environmental Condition 37
8.11 Evidence of Financial Arrangements 37
8.12 Compliance with Safety Program 37

Article 9 – Engineer's Status During Construction 37
9.01 Owner's Representative 37

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9.02 Visits to Site 37
9.03 Project Representative 38
9.04 Authorized Variations in Work 38
9.05 Rejecting Defective Work 38
9.06 Shop Drawings, Change Orders and Payments 39
9.07 Determinations for Unit Price Work 39
9.08 Decisions on Requirements of Contract Documents and Acceptability of Work 39
9.09 Limitations on Engineer's Authority and Responsibilities 39
9.10 Compliance with Safety Program 40

Article 10 – Changes in the Work; Claims 40
10.01 Authorized Changes in the Work 40
10.02 Unauthorized Changes in the Work 41
10.03 Execution of Change Orders 41
10.04 Notification to Surety 41
10.05 Claims 41

Article 11 – Cost of the Work; Allowances; Unit Price Work 42
11.01 Cost of the Work 42
11.02 Allowances 45
11.03 Unit Price Work 45

Article 12 – Change of Contract Price; Change of Contract Times 46
12.01 Change of Contract Price 46
12.02 Change of Contract Times 47
12.03 Delays 47

Article 13 – Tests and Inspections; Correction, Removal or Acceptance of Defective Work 48
13.01 Notice of Defects 48
13.02 Access to Work 48
13.03 Tests and Inspections 49
13.04 Uncovering Work 49
13.05 Owner May Stop the Work 50
13.06 Correction or Removal of Defective Work 50
13.07 Correction Period 50
13.08 Acceptance of Defective Work 51
13.09 Owner May Correct Defective Work 52

Article 14 – Payments to Contractor and Completion 52
14.01 Schedule of Values 52
14.02 Progress Payments 52
14.03 Contractor's Warranty of Title 55
14.04 Substantial Completion 55
14.05 Partial Utilization 56
14.06 Final Inspection 57
14.07 Final Payment 57
14.08 Final Completion Delayed 58

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14.09 Waiver of Claims 58

Article 15 – Suspension of Work and Termination 59
15.01 Owner May Suspend Work 59
15.02 Owner May Terminate for Cause 59
15.03 Owner May Terminate For Convenience 60
15.04 Contractor May Stop Work or Terminate 60

Article 16 – Dispute Resolution 61
16.01 Methods and Procedures 61

Article 17 – Miscellaneous 61
17.01 Giving Notice 61
17.02 Computation of Times 62
17.03 Cumulative Remedies 62
17.04 Survival of Obligations 62
17.05 Controlling Law 62
17.06 Headings 62

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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.

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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.

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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.

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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

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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 it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. 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).

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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.

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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

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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.

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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:

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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.

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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.

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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

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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

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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.

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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.

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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

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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:

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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.

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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,

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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:

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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

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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.

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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;

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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

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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

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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,

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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.

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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

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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

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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

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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.

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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.

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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 .

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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.

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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.

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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.

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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

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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.

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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

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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.

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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

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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:

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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

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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

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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

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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).

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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

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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.

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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.

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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:

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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.

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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

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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

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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.

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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

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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.

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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

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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.

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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

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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

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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:

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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.

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SUPPLEMENTARY CONDITIONS

TABLE OF CONTENTS

PART I - AMENDMENTS TO GENERAL CONDITIONS

Article Number	Title
1	DEFINITIONS AND TERMINOLOGY
2	PRELIMINARY MATTERS
3	CONTRACT DOCUMENTS; INTENT, AMENDING, REUSE
4	AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS
5	BONDS AND INSURANCE
6	CONTRACTOR'S RESPONSIBILITIES
7	OTHER WORK AT THE SITE
8	OWNER'S RESPONSIBILITIES
9	ENGINEER'S STATUS DURING CONSTRUCTION
11	COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK
12	CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES
13	TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK
14	PAYMENTS TO CONTRACTOR AND COMPLETION
15	SUSPENSION OF WORK AND TERMINATION
16	DISPUTE RESOLUTION
17	MISCELLANEOUS

PART II – STATE AND LOCAL PROVISIONS

00820 ADDITIONAL ARTICLES

00820.01-A	REQUIRED CONSTRUCTION CONTRACT PROVISIONS UNDER THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION'S CLEAN WATER FUND
00820.01-A1	REQUIRED CONNECTICUT GENERAL STATUTES (SECTION 4a-60)
00820.01-B	EXECUTIVE ORDER NO. 3
00820.01-C	EXECUTIVE ORDER NO. 17
00820.01-D	EXECUTIVE ORDER NO. 16
00820.02	WAGE RATE REQUIREMENTS
00828	UTILITY TELEPHONE NUMBERS

00830 WAGE DETERMINATION SCHEDULE

00830.01	CONNECTICUT DEPARTMENT OF LABOR WAGE RATES
00830.02	DAVIS-BACON WAGE RATES

00860 LIST OF DRAWINGS

INTERIM GUIDANCE FOR MINORITY BUSINESS ENTERPRISE AND WOMEN'S BUSINESS ENTERPRISE REQUIREMENTS

EPA GUIDANCE FOR UTILIZATION OF S/M/WBE IN PROCUREMENT UNDER ASSISTANCE AGREEMENTS

CONTRACT LANGUAGE REQUIRED PURSUANT TO PUBLIC ACTS 88-351 AND 89-253

SUPPLEMENTARY CONDITIONS

PART I - AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC Document No. C-700, 2007 edition) 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 District and the Contractor agree and acknowledge that the general provisions contained in the State of Connecticut Department of Energy and Environmental Protection Clean Water Fund regulations (Sec. 22a-482-1 et seq.) or their equivalent apply to eligible work to be performed under this Contract and that these provisions supersede any conflicting provisions of this Contract.

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

SC – 1.01 A.1

Delete paragraph 1.01 A.1. in its entirety and replace with the following:

1. Addenda—Written or graphic instruments issued by the Owner prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

SC – 1.01 A.2

Delete paragraph 1.01 A.2. in its entirety and replace with the following:

2. Agreement - The written instrument numbered 00500 between the Owner and the Contractor evidencing the agreement between Owner and Contractor regarding the Work.

SC – 1.01A.3

Delete paragraph 1.01 A.3 in its entirety and replace with the following:

3. Application for Payment—The document in the form acceptable to the Engineer which shall be completed and submitted by Contractor during the course of the Work, along with all supporting documentation required pursuant to the Contract Documents, to request progress or final payments.

SC – 1.01 A.5

Delete paragraph 1.01 A.5. in its entirety and replace with the following:

5. Bid—The offer or proposal of a Bidder submitted in the form and in such detail as is prescribed by the OWNER setting forth the prices for the Work to be performed by the Bidder.

SC – 1.01 A.9

Delete paragraph 1.01 A.9 in its entirety and replace with the following:

9. Change Order—A document issued on or after the Effective Date of the Agreement which is signed by Contractor and Owner authorizing an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times and which has been reviewed and recommended by the Engineer.

SC - 1.01 A.12

Delete paragraph 1.01 A.12 in its entirety and replace with the following:

12. Contract Documents—The Agreement and those items identified in the Agreement as "Contract Documents". Only printed or hard copies of such items are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

SC – 1.01 A.13

Delete paragraph 1.01 A.13 in its entirety and replace with the following:

13. Contract Price—The payment to which the Contractor is entitled from the Owner for Contractor's completion of the Work in accordance with the Contract Documents (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

SC – 1.01 A.19

Delete paragraph 1.01 A.19 in its entirety and replace with the following:

19. Engineer—The individual or entity named as the Engineer in the Agreement

SC – 1.01 A.21

Delete paragraph 1.01 A.21 in its entirety and replace with the following:

21. *General Requirements*—Those requirements set forth in Division 1 of the Specifications.

SC 1.01 A.22
Delete paragraph 1.01 A.22. in its entirety and replace with the following:

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, soil contamination or other materials in such quantities or circumstances that may adversely affect human health or the environment.

SC – 1.01 A.25

Delete paragraph 1.01 A.25 in its entirety and replace with the following:

25. Liens – Charges, security interests, or encumbrances upon any funds, real property, or personal property which is a part of the Project.

SC - 1.01 A.29

Delete paragraph 1.01 A.29 in its entirety and replace with the following:

29. Owner— The Metropolitan District

SC – 1.01 A.32

Delete paragraph 1.01 A.32 in its entirety and replace with the following:

32. *Progress Schedule*—A schedule, prepared and maintained by Contractor and approved by the Owner, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

SC – 1.01 A.34

Delete paragraph 1.01 A.34 in its entirety and replace with the following:

34. *Project Manual*—The documentary information compiled for use by Bidders in preparing a Bid for, and performing , 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.

SC – 1.01 A.39

Delete paragraph 1.01 A.39 in its entirety and replace with the following:

39. Schedule of Values - A schedule, prepared and maintained by Contractor and approved by Owner, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

SC – 1.01A.41

Delete paragraph 1.01 A.41 in its entirety and replace with the following:

41. Site - Land or areas indicated in the Contract Documents upon which the Work will be performed or which Contractor may use in connection with the performance of the Work, including rights-of-way and easements providing Contractor with access thereto.

SC-1.01A.42.

Delete paragraph 1.01A.42. in its entirety and replace with the following:42. Specifications— Those specifications set forth in Division 1 thru Division 16, inclusive, of the Project Manual.

SC - 1.01 A.44

Delete paragraph 1.01 A.44 and replace with the following:

44. *Substantial Completion*—The state of completion of the Work (or a specified part thereof), that, in the opinion of Engineer, is sufficient, and 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.

SC – 1.01 A.45

Delete paragraph 1.01 A.45 and replace with the following:

45. *Successful Bidder*—The Bidder to whom Owner issues a Notice of Award.

SC – 1.02 E. 1-3 inclusive

Delete paragraphs 1.02 E.1-3, inclusive and replace with the following:

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 location specified by Owner or Engineer) 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 at the Site such that 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 at the Site such that said services, material, or equipment is complete and ready for intended use.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01B.

Delete paragraph 2.01B. of the General Conditions in its entirety and replace with the following:

B. Before any Work at the site is started, Contractor shall deliver to Owner, with copies to Engineer and each additional insured identified in Article 5 of the Supplementary Conditions, certificates of insurance (and other evidence of insurance which Owner or any additional insured may reasonably request) which Contractor is required to purchase and maintain in accordance with the requirements of Article 5.

SC-2.02A.

Delete "ten" in the first line and replace with "five."
SC-2.03A.

Delete paragraph 2.03A. of the General Conditions in its entirety and replace with the following:

A. The Contract Time will commence to run on the date provided in the Notice to Proceed.

SC - 2.05

Add the following at the end of Paragraph 2.05.A.3 of the General Conditions

Schedule of Values Submittal shall include: Itemize contractor’s general conditions costs as follows: Mobilization, Demobilization, Superintendent, Project Manager, trailers/field office, Dumpsters, Bond, Traffic Control (if not listed as an item or included elsewhere), Security, Fencing, Home Office/Administration, Utility Hookups, Temporary Utilities, Permits, Survey/Layout, Testing Labs, Preconstruction Survey, As-Built Documents, Project Close Out Cost and additional line items as may be required by the Owner.

Add a new paragraph immediately after paragraph 2.05A of the General Conditions which is to read as follows:

B. *Work Planning Conference*: Within five (5) business days after the submission of the Schedules described in subparagraph A above and before any Work at the Site is started, a conference attended by the Owner, Contractor, Engineer, and others as appropriate, will be held to discuss in detail the means and methods proposed to be employed by the Contractor in the performance of the Work and how that impacts the proposed schedule. Particular attention will be given to such means and methods and scheduling as may

have an adverse impact on traffic flow in the high traffic areas of the Work to minimize disruptions. If the Contractor has submitted Value Engineering Proposal(s), such proposals will also be discussed.

C. *Contractor's and Subcontractor's Licenses and Workers Trade Licenses*: Before commencing work this submittal is required. Contractors are advised to check the current State of Connecticut regulations before submitting their bids. Regulations of Connecticut State Agencies, Title 20: Professional Licenses, Department of Consumer Protection (4) Occupational Licenses, Sec. 20-332 Require certain trades to be licensed while performing work on State Projects as follows:

- Unlimited plumbing-piping contractor's license (P-1)
- Unlimited plumbing-piping journeyperson's license (P-2)
- Plumbing & Piping Limited Contractor (P-7)
- Licensed Land Surveyor (Sec 20-300-1)
- Limited Electrical Contractor
- Limited Electrical Journeyperson

SC – 2.06 A.

Delete paragraph 2.06 A. and replace with the following:

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate in the discretion of the Owner 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.

SC - 2.06 B

Add two new paragraphs after 2.06 B of the General Conditions which are to read as follows:

C. If the Contractor or the Owner wishes to make a change in the designated authorized representative during the Contract period, the party wishing to make the change shall notify the other party in writing at least ten (10) business days prior to the change being made. The Contractor shall not be permitted to make such change without the written consent of the Owner. To the extent there is a change in assignment or availability of any of the designated authorized representative, which change is beyond the control of the Contractor, Contractor shall notify the Owner in writing no later than forty-eight (48) hours of such change in assignment or availability. As a result of such change, the Owner shall have the right, in its sole and absolute discretion, to terminate the Contract if it believes such termination to be in the best interests of the Owner.

D. At this conference Contractor shall designate a representative who will act as the onsite Competent Person as defined by OSHA that has the ability to identify hazardous conditions and must have the authority to take action to maintain a safe workplace.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01.B.

Delete Paragraph 3.01.B of the General Conditions and replace with the following paragraphs, which are to read as follows:

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 and the following provisions:

1. In the event of conflicts among the Contract Documents, the Contract Documents shall be construed according to the following order of precedence unless the Contract Documents expressly and specifically provide otherwise.:

* Highest Precedence: Modifications (to the Agreement after the Agreement is executed)

* Second Precedence: Agreement

* Third Precedence: Addenda – Addendum with latest date to take precedence

* Fourth Precedence: Supplementary General Conditions

* Fifth Precedence: General Conditions

* Sixth Precedence: Drawings and Specifications

2. If, during the performance of the work, the Contractor finds a conflict, error or discrepancy between or among one or more of the Sections or between or among one or more Sections and the Drawings, the Contractor shall furnish the higher performance requirement. The higher performance requirement shall be considered the equipment, material, device or installation method which represents the most stringent option, the highest quality or the largest quantity.

3. In all cases, figured dimensions shall govern over scaled dimensions, but work not dimensioned shall be as directed by the Engineer and work not particularly shown, identified, sized, or located shall be the same as similar work that is shown or specified.

4. Detailed Drawings shall govern over general drawings, larger scale Drawings take precedence over smaller scale Drawings, Change Order Drawings shall govern over Contract Drawings and Contract Drawings shall govern over Shop Drawings.

5. If the issue of precedence is due to a conflict or discrepancy between the provisions of the Contract Documents and any referenced standard, or code of any technical society, organization or association, the provisions of the Contract Documents will take precedence if they are more stringent or presumptively cause a higher level of performance. If there is any conflict or discrepancy between standard specifications, or codes of any technical society, organization or association, or between Laws and Regulations, the higher performance requirement shall be binding on the Contractor, unless otherwise directed by the Engineer. In the case of discrepancy between the provided Technical Specifications and the attached City of Hartford Standard / Town Specifications, the Technical Specifications shall take precedence for the following materials, equipment or Work:

a. Sewer, water, combined sewer, tunnel or related pipelines or utilities, including related work and appurtenances including but not limited to manholes, hydrants, water and sewer services.
b. Sewer flow monitoring equipment and appurtenances.

City of Hartford Standard Specifications shall take precedence on the following type Work:
Stormwater drainage or catchbasins, pavement, sidewalks, curbing, driveway and driveway ramps, vehicular and pedestrian traffic control devices and appurtenances, street lighting, permanent signage, and miscellaneous restoration and surficial treatments.

6. In accordance with the intent of the Contract Documents, the Contractor accepts the fact that compliance with the order of precedence specified shall not justify an increase in Contract Price or an extension in Contract Time nor limit in any way, the Contractor's responsibility to comply with all Laws and Regulations at all times.

SC-3.01C.

Add a new paragraph immediately after Paragraph 3.01C. 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, including without limitation, that required pursuant to Connecticut Agency Regulations §22a-482-4-(g), 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.

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

SC-4.01 A., B and C

Delete Section 4.01 in its entirety and replace with the following:

A. Owner shall provide the Contractor with access to 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 providing Contractor with access to the Site or a part thereof, Contractor may make a Claim therefore as provided in Paragraph 10.05.

B. If all lands and rights-of-way are not obtained as herein contemplated before Contractor commences the Work, Contractor shall begin the Work upon such land and rights-of-way as to which Owner has obtained access.

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.

SC – 4.02 A. 1 and 4.02 A.2

Delete 4.02 A. 1 and 4.02 A.2 in their entirety and replace with the following:

1. those reports in the possession of Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
2. those drawings in the possession of Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
3.

SC-4.03.A

Delete 4.03.A in its entirety and replace with the following:

SC-4.03.A Differing Site Conditions - Notice

1. During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the Contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before they are disturbed and before the affected work is performed.
2. Upon written notification, the Engineer will investigate the conditions, and if he/she determines that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the Contract, an adjustment, excluding loss of anticipated profits, will be made and the Contract modified in writing accordingly. The Engineer will notify the Contractor of his/her determination whether or not an adjustment of the Contract is warranted.
3. No Contract adjustment that results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice.
4. No Contract adjustment will be allowed under this clause for any effects caused on unchanged work.
5. Note that existing utilities not shown or indicated on the drawings are not a differing site condition under the contract. They are a normal condition generally encountered and inherent in this type of work.

SC-4.04B

Delete 4.04B. in its entirety and replace with the following:

SC – 4.04.B, Differing Site Conditions –Existing Utilities Not Shown or Indicated

1. .The location of all utilities and sub-surface structures were taken from survey and records of others, including, but not limited to, the District Member Town, and other Utilities, etc, and are considered approximate, as to size, number of utilities and locations and are indicated on the drawings to give Bidders a general idea of existing conditions. It is understood and agreed that the Contractor shall not rely solely upon these drawings for such information, but shall make examinations in the field by various available methods and shall obtain information from municipalities, utilities and other entities as necessary as to the location of all sub-surface structures. It is not warranted that all pipes and underground structures are shown. Under NO circumstances shall the Contractor excavate in any area prior to services mark-outs by the appropriate utility. The Contractor is hereby reminded that the Connecticut General Statutes require notice to utilities of pending excavation at or near their facilities – Contract shall call "Call Before You Dig" 1-800-922-4455 at least 72 hours prior to beginning excavation.

2. Further, the Contractor is hereby advised that all locations of existing pipes , conduits, utilities, foundations and utility house services are not warranted to be correct and the Contractor shall have no claim on that account should they be other than shown. Locations of existing utilities are shown in their approximate locations as represented by utility drawings. Therefore their actual locations may vary. Under no circumstances shall the Contractor excavate in any area prior to service mark-outs by the appropriate utility company.

SC-4.05A.

Delete paragraph 4.05A in its entirety and replace with the following:

A. Contractor 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.

B. Engineer may check the lines, elevations, reference marks, batter boards, etc., set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate construction of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.

C. The Owner must verify the Contractor's starting reference points prior to the start of construction work in the field.

D. Contractor shall provide stationing and layout in accord with MDC Standard Policy – see Section 01050 Field Engineering.

SC – 4.06 A

Delete paragraph 4.06 A in its entirety and replace with the following:

A. The Supplementary Conditions identify those reports and drawings in Owner's possession relating to Hazardous Environmental Conditions that have been identified at the Site.

SC – 4.06 G

Delete paragraph 4.06 G in its entirety.

SC – 4.06 H

Delete paragraph 4.06 H and replace with the following:

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify, defend, and hold harmless Owner and Engineer, and the officers, directors, shareholders, 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 or exacerbated 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 **.**

ARTICLE 5 - BONDS AND INSURANCE

SC-5.01C

Add 1 new paragraph immediately after paragraph 5.01C of the General Conditions which is to read as follows:

D. In any contract where a maintenance period or service period is not by title specified, then the Owner's Standard Specifications shall apply or, as may be determined by the Owner, Contractor shall provide a Performance Bond for the full amount of the total bid, in favor of "The Metropolitan District" and the Town of Bloomfield, the Town of East Hartford, the City of Hartford, the Town of Newington, the

"Town of West Hartford", the "Town of Rocky Hill", the "Town of Wethersfield" and the "Town of Windsor (collectively, the "Member Towns"). A Payment Bond in favor of the Owner in the full amount of the Contractor's bid is required. The Contractor shall also provide a Labor and Material Payment Bond naming the MDC and the Member Towns as Obligees.

SC 5.02 A

Delete paragraph 5.02 A and replace with the following:

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by 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.

SC-5.03A

Add the following to the end of paragraph 5.03A of the General Conditions:

Contractor shall provide, on such certificates of insurance, the following statement in its entirety in the section of the certificate entitled "Description of Operations/Locations/Vehicles/Special Items" – The Metropolitan District and the Towns of: Bloomfield, East Hartford, Hartford, Newington, Rocky Hill, West Hartford, Wethersfield and Windsor are named as additional insureds with respect to the insured's Commercial General Liability and Automobile Liability Insurance Policies. All insurers waive all rights of Subrogation against the Owner. All insurance is primary for all claims covered thereby. Commercial General Liability Insurance includes contractual liability coverage.

SC-5.04.

The following shall supplement the insurance requirements of Paragraph 5.04:

The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by law:

The Contractor shall maintain at its own expense during the term of this Contract and any maintenance period provided herein the following insurance covering any claims incurred or arising during the term of or as a result of the Contractor's performance under the Contract which insurance shall be issued by an admitted carrier authorized to do business in the State of Connecticut and having agents upon whom service of process may be made in the State of Connecticut and shall contain at a minimum the following provisions, coverages and policy limits of liability:

The Metropolitan District, State of Connecticut, and the Member Towns are to be named as additional named insured's on Commercial General Liability and Umbrella Policies.

a. Commercial General Liability including blanket contractual and products/completed operations coverages. The limits of liability provided shall be no less than One Million Dollars ($1,000,000) each occurrence, One Million Dollars ($1,000,000) aggregate. X, C and U coverages must be provided if applicable. Per project aggregate must apply. The Metropolitan District, the Member Towns and the State of Connecticut shall be named as additional insureds.

b. Automobile Liability with limits of not less than One Million Dollars ($1,000,000) combined single limit, including coverage for owned, non-owned, hired and/or borrowed vehicles.

c. Workers' Compensation as required by Connecticut law and Employer's Liability with a limit of

not less than One Hundred Thousand Dollars ($100,000) per occurrence, Five Hundred Thousand Dollars ($500,000) disease policy limit, and One Hundred Thousand Dollars ($100,000) disease each employee. The policy must cover employees of out of state contractors while working in Connecticut by endorsement/rider or actual policy.

d. Umbrella Liability in excess of Employer's Liability, Commercial General Liability, and Automobile Liability with a limit of not less than Five Million Dollars ($5,000,000) each occurrence, Five Million Dollars ($5,000,000) aggregate. Coverage is to be written on a following form basis.

e. Protective Liability for and in the name of the Metropolitan District with a per project minimum limit of liability of not less than One Million Dollars ($1,000,000) each occurrence and One Million Dollars ($1,000,000) aggregate. (A copy of policy must be provided).

f. Environmental Impairment/Pollution Liability covering liability arising out of the pollution or impairment of the environment, including clean-up costs, caused by the performance of the Work of this project of not less than One Million Dollars ($1,000,000).

The Contractor and/or any subcontractor shall in the case of any blasting activities, provide an endorsement on same to be included on the Comprehensive General Liability policy. Such coverage shall afford the same limits and aggregates and shall be additionally supported by the Umbrella and/or following form Excess Liability Coverage.

The Owner may require proof of financial responsibility and/or other securities if any insurance policy indicates self-insured retention below the minimum level of insurance required by the Contract.

The acceptance by the Owner of certificates indicating the limits of coverage under any policy or policies shall not limit the liability of the Contractor.

The Contractor shall furnish to the Owner a Certificate of Insurance, Document 00630 attached, for each of the above-referenced policies within **ten (10) business days** from the date of its receipt of the notification of award. Failure to do so shall be a default hereunder, entitling the Owner to terminate the Contract. Such certificates must contain information regarding the policies in force, policy numbers, limits, policy periods, and the following provisions; 30 days prior written notice of any material policy change, nonrenewal, or cancellation shall be given to the Owner, by certified mail, except in the event of non-payment of premium, in which case notice will be 10 days. If any insurance policy is cancelled for non-payment of premiums, the Owner shall have the right to pay any such premiums and deduct the amount thereof from amounts due to the Contractor under the Contract.

The Contractor shall, prior to commencing the Work, also provide to the Owner a statement from the State Treasurer pursuant to Connecticut General Statutes ("C.G.S.") Section 31-286a that the Contractor is not liable for any workers' compensation payments made pursuant to C.G.S. Section 31-355. The State Treasurer’s statement shall be provided to the Owner within fifteen (15) business days from the date of receipt of the notification of award. Failure to do so shall be a default hereunder entitling the Owner to terminate the Contract.

SC 5.04B.1.

Delete paragraph 5.04B.1. in its entirety and replace with the following:

The insurance required by paragraph 5.04A.3 through 5.04A.6 inclusive will provide primary coverage for all claims covered thereby. With respect to insurance required by Paragraph 5.04.A.6 include as additional insured 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, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds.

SC-5.06A.

Delete paragraphs 5.06A. and A1 thru A7 in their entirety.

SC-5.06B.

Delete Paragraph 5.06B. in its entirety.

SC-5.06C.

Delete Paragraph 5.06C. in its entirety.

SC-5.06D.

Delete paragraph 5.06D. in its entirety.

SC-5.06E.

Delete paragraph 5.06E. in its entirety.

SC-5.07A.

Delete paragraph 5.07A. of the General Conditions in its entirety and replace with the following.

A. All insurance policies provided by the Contractor shall contain provisions to the effect that the insurer waives all rights of subrogation against any of the insured, additional insureds, (and the officers, directors, shareholders, partners, employees, agents, consultants and subcontractors of each and any of them) Owner and the Engineer.

SC-5.08A.

Delete paragraph 5.08A. in its entirety.

SC-5.08B.

Delete paragraph 5.08B. in its entirety.

SC-5.09A.

Delete paragraph 5.09A. in its entirety and replace with the following:

A. If Owner has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by Contractor in accordance with this Article 5 on the basis of its not complying with the Contract Documents, Owner will notify Contractor in writing thereof within ten days of the date of delivery of such certificates to Owner in accordance with paragraph 2.01. Contractor will provide such additional information in respect of insurance provided by Contractor as Owner may reasonably request.

SC – 5.10

Delete paragraph 5.10 in its entirety.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

SC – 6.01B

Delete paragraph 6.01B in its entirety and replace with the following:

B. At all times during the progress of the Work, Contractor shall assign a competent full time resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. This individual shall be capable of effectively communicating with the Owner, Engineer and others working at the Site or otherwise involved in the Project. It is a substantial and material obligation of the Contractor under the Contract Documents that the Contractor provide competent personnel to supervise the performance of, and to perform, the Work at all times throughout the term of this Contract

Owner shall have the right to reject a superintendent for cause. Contractor shall submit qualifications for review and approval of the Owner both prior to proceeding with the work and also for any proposed replacement superintendent during the progress of the work.

C. Whenever the award for the **Base Bid Plus Accepted Alternates is $2,000,000 or greater,** the Contractor shall also employ a competent and qualified full time resident Project Manager for the Project (in addition to a full time resident Superintendent) who shall be dedicated to the project full time and who shall be acceptable to the Owner. Contractor shall submit Project Manager qualifications for review and approval of the Owner both prior to proceeding with the work and also for any proposed replacement Project Manager during the progress of the work. The Project Manager shall represent the Contractor and any communications given to the Project Manager shall be binding as if given to the Contractor. The Project Manager will be assigned to and located at the Project site during and for the duration of the Work.

SC-6.02B.

Add new paragraph to Article 6.02B, insert the following subparagraph 1:

1. The Owner's holidays are as follows:

   a. New Year's Day
   b. Martin Luther King Jr. Day
   c. President's Day
   d. Good Friday
   e. Memorial Day
   f. Independence Day
   g. Labor Day
   h. Columbus Day
   i. Veteran's Day
   j. Thanksgiving Day
   k. Day after Thanksgiving
   l. ½ Day before Christmas
   m. Christmas Day
   n. ½ Day before New Year's Day

2. The Contractor shall obtain from the Owner a listing of dates when holidays are observed in order to schedule and coordinate all work with the Owner, including all necessary notifications provided in this Contract.

Add the following new paragraphs immediately after paragraph 6.02B. which are to read as follows:

C. Regular working hours are defined as 8 hours per day, Monday through Friday, excluding holidays, between the hours of 7:00 AM and 5:00 PM. Note that certain Projects within the City of Hartford / Towns may have more restrictive Permit conditions with respect to start and finish times and working hours. Also note that State Roads may have special work restrictions and requirements for days before and after a Holiday. Requests to work other than regular working hours shall be submitted to Engineer not less than 48 hours prior to any proposed weekend work or scheduled extended work weeks. Occasional unscheduled overtime on weekdays may be permitted provided two hours notice is given to Engineer.

D. Contractor shall reimburse the Owner for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated in Article SC-6.02C. At Owner's option, overtime costs may either be deducted from the Contractor's monthly payment request or deducted from the Contractor's retention prior to release of final payment. Overtime costs for the Owner's personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the Engineer or Owner's independent testing laboratory shall be calculated in accordance with the terms of their respective contracts with the Owner.

SC-6.03C.

Add the following new paragraphs immediately after paragraph 6.03C.:

D. This Agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, Public Law 87-581, 87th Congress. No Contractor or Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times that person's basic rate of pay for all hours worked in excess of forty hours in such work week.

E. Contractor shall employ only competent persons to do the Work and whenever Owner shall notify Contractor, in writing, that any person on the Work appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the consent of Owner.

F. Contractor and Subcontractors shall, insofar as practicable, give preference in the hiring of workers for the Project to qualified local residents with first preference being given to citizens of the United States who have served in the armed forces of the United States and have been honorably discharged therefrom or released from active duty therein.

SC-6.04
Add the following new paragraph immediately after paragraph 6.04A
B – Contractor shall be required to submit to the Engineer, on a weekly basis, a Two (2) Week Look Ahead schedule that includes but is not limited to the following: Scheduled work, number of crews and locations, traffic work zones and detours and additional information as may be required by the Owner.

SC-6.06.

Delete Paragraphs 6.06A. and 6.06B.in their entirety and replace with the following:

A. Contractor shall not subcontract or assign any portion of the work required by this Contract without the prior written approval of the Owner except for any subcontracted work identified herein. Contractor shall not employ any Subcontractor, Supplier or other person or organization, (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner may have reasonable objection. Acceptance of any Subcontractor, other person or organization by

Owner shall not constitute a waiver of any right of Owner to reject defective Work. Contractor shall not be required to employ any Subcontractor, other person or organization against whom Contractor has reasonable objection.

B. Not Used.

SC-6.06E.

Add the following new sentence at the end of paragraph 6.06E. :

Owner or Engineer may furnish to any such Subcontractor, Supplier or other person or organization, to the extent practicable, information about amounts paid on their behalf to Contractor in accordance with Contractor's Applications for Payment.

SC – 6.06 G

Delete paragraph 6.06G in its entirety and replace with the following:

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.

SC – 6.06 G

Add the following new paragraph immediately after paragraph 6.06G

H. Prior to the commencement of any portion of the Work by a Subcontractor whose subcontract value is equal to or greater than $500,000, the Contractor shall provide to the Owner a current DAS Contractor Prequalification Certificate for such Subcontractor along with an Update (Bid) Statement.

SC – 6.07 B

Delete paragraph 6.07 B in its entirety.

SC – 6.07 C

Delete paragraph 6.07 C in its entirety and replace with the following:

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify, defend, and hold harmless Owner and Engineer, and the officers, directors, shareholders, 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.

SC-6.10A

Add the following new sentence at the end of paragraph 6.10A:

The materials and supplies to be used in the Work of this Contract are exempt from the Sales and Use Tax of the State of Connecticut. Contractor shall obtain the proper certificates, maintain the necessary records and otherwise comply with the requirements of State of Connecticut.

SC 6.11 A.3

Delete paragraph 6.11 A.3 in its entirety and replace with the following:

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify, defend, and hold harmless Owner and Engineer, and the officers, directors, shareholders, 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, arising out of, or based upon Contractor's performance of the Work.

SC-6.13.

Prior to the first sentence of paragraph 6.13 A, add the following sentence:

A. Contractor shall be solely responsible for the safety and security of the Site, the Work on the Site and for all persons who enter the Site.

SC – 6.13 E

Delete paragraph 6.13 E in its entirety and replace with the following:

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 a defect in the Drawings or Specifications of which the Contractor had no knowledge prior to such damage or loss or to the acts or omissions of Owner or Engineer or anyone employed by either of them, or anyone for whose acts either 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 or for whose acts any of them may be liable

Add the following paragraph after paragraph 6.13.F:

G. The Contract Documents, and the joint and several phases of construction hereby contemplated are to be governed, at all times by applicable provisions of the Federal Law(s), including, but not limited to, the latest amendments of the following:

1. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-596;
2. 29 CFR Part 1910 - Occupational Safety and Health Standards for General Industry;
3. 29 CFR Part 1926 – Safety and Health Regulations for Construction,

Contractors are urged to make themselves familiar with the requirements of these regulations.

Add the following paragraph at the end of paragraph 6.13.G:

H. *Blasting and Explosives:* The Contractor shall abide by all applicable regulations governing blasting when approved for use by the Owner in addition to the following:

1. Blasting Precautions

   a. Blasting shall be conducted with all possible care in order to avoid injury to persons and property. The blasting area shall be well-covered and a sufficient warning shall be given to all persons in the vicinity of the work before blasting.

   b. The explosives used shall be of such power and placed in such quantities and positions that will not make the excavation unduly large nor shatter unduly the rock upon or against which the work is to be installed nor injured the work already in place. Where masonry is to be built against the rock, all loose or shattered rock shall be completely removed so the masonry can be built firmly in contact with the solid rock.

   c. Contractor's attention is directed to the fact of the proximity of gas lines, water lines and telephone ducts. Extreme caution must be utilized so as not to damage or disrupt these utilities. Any damage or disruption costs resulting from blasting shall be borne by the Contractor.

2. Pre-blast Survey:

   a. Prior to any blasting, the Contractor shall submit to the Owner, a Pre-Blast Condition survey of all structures located within 200 feet of any proposed blasting and all wells abutting the project areas within 1,000 feet of the proposed blasting area.

   b. Contractor shall retain the services of a laboratory certified by the State of Connecticut to prepare test on all wells abutting the project areas as well as all wells located within 1,000 feet of the blasting area. The test reports shall be furnished to the Owner prior to any blasting on the project and shall contain data on water levels measured with the well shutdown and water quality as required by the regional health department, and the State of Connecticut Department of Energy and Environmental Protection. Costs for the above shall be borne by the Contractor.

3. Explosives must be carefully transported, stored, handled and used as required by Federal Laws (Occupational Safety and Health Act) the several local and State ordinances and laws, and the necessary permits for such transportation, storage, handling and use shall be obtained by the Contractor who shall show such permits to the Owner before any blasting will be allowed. The Contractor shall keep on the job only such quantity of explosives as may be needed for the work underway and only during such time as they are being used. Explosives shall be stored in a secure manner and separately from all tools. Caps or detonators shall be stored separately and at a point over 100 feet distant from the explosives. Receptacles especially constructed for use in the storage of explosives shall be provided for the storage of explosives and they shall be proof against bullets, fire or other conditions that might cause explosion of the contents. When the need for explosives ceases, all such material remaining on the job shall be promptly removed from the premises.

4. Under any circumstances, the approval of the Owner shall first be obtained before blasting is permitted and where, in the opinion of the Owner, blasting is unsafe or dangerous to persons or to existing structures and utilities. Contractor shall employ pneumatic tools, drilling and splitting mechanically or by hand or by other means not requiring the use of explosives for the removal of rock, boulders or ledge, at no additional expense to the Owner. Under no circumstance shall pre-blasting be allowed.

5. Before any explosives, such as dynamite or detonator caps, are stored or used at the Site or Sites of construction under the Contract Documents, Contractor shall contact the Fire Department of the Municipality in which the Project is located, for instructions relative to the regulations for possession and use of explosives in such Municipality.

6. Contractor shall obtain all required permits or licenses for possession and use of explosives on the site or sites of construction under this contract. In addition, the Contractor shall be responsible:

   a. To provide a person who shall be responsible for the explosive materials at all times;

   b. For the keeping of records which shall show by date the explosive materials delivered to the site or sites of construction, the explosive materials used for construction and the explosive materials removed from the Site or Sites of construction under the Contract Documents;

   c. For the non-storage of explosive materials overnight on the Site or Sites of construction under the Contract Documents;

   d. For the immediate reporting to the Fire Department of the Municipality of all unaccounted-for explosive materials.

7. All records relating to the possession and use of explosive materials under the Contract Documents shall be open to inspection by the Police and Fire Departments of the Municipality in which the Project is located, at any time.

8. The use of explosives on State-owned and privately-owned properties shall be subject to all additional requirements as may be required by the above-mentioned property owners.

9. In addition to other requirements specified and all other necessary or required precautionary measures, the Contractor shall be held responsible for completely, adequately and carefully covering all blasts with suitable blasting mats in such a manner as to prevent damage to landscape features, structures, utilities or other surrounding objects and in a manner that will prevent injury to persons.

10. The use of the maximum number of drill holes, together with minimum quantities of explosives in each drill hole and utilizing split-second delayed caps is the preferable method of accomplishing the blasting operations in conjunction with rock excavation.

11. Contractor shall keep blasting logs of all of Contractor's blasting operations. The blasting logs shall include all pertinent information with respect to the blasting operations including personnel, times, locations, description of charges, methods, details of blasting patterns and excavations, and such other information as may be required. Contractor shall furnish to the Owner each day, in which blasting operations are preformed, certified copies of the Contractor's blasting logs covering all of Contractor's blasting operations.

12. Unless specifically permitted, no blasting shall be done between the hours of sunset and sunrise on any day and no blasting will be allowed on Sundays or legal holidays.

13. In the event that any provisions herein are contrary to or inconsistent with the above referred to Occupational Safety and Health Act, provisions of the Occupational Safety and Health Act shall prevail. For additional requirements see the applicable Technical Specification Section "Trench Excavation, Rock and Earth Refill" of the Specifications.

SC-6.16A.

Delete the last sentence in paragraph 6.16A. in its entirety and replace with the following:

If Engineer determines that the incident giving rise to the emergency action was not the responsibility of the Contractor and that a change in the Contract Document is required because of the action taken by the Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

SC – 6.18 A.

Delete paragraph 6.18 A in its entirety and replace with the following:

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, including but not limited to changes in the Work, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

SC-6.20A.

Delete paragraph 6.20A. in its entirety and replace with the following:

A. To the fullest extent permitted by Laws and Regulations, Contractor shall defend, indemnify and hold harmless Owner, Engineer and the officers, directors, shareholders, 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 or loss or damage:

1. 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; and

2. is caused in whole or in part 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, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such indemnified party unless caused by the sole negligence of a party indemnified hereunder. If through the acts of neglect on the part of Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the Work, Contractor shall settle with such other Contractor or Subcontractor by agreement or arbitration if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against Owner and/or Engineer, or the officers, directors, shareholders, members, partners, employees, agents, consultants or subcontractors of either or both on account of any damage alleged to have been sustained, Owner shall notify Contractor, who shall indemnify, defend and save harmless Owner, Engineer, and the officers, directors, shareholders, members, partners, employees, agents, consultants and subcontractors of each against any such claims.

3. Contractor shall at all times indemnify, defend and save harmless the Owner, any municipality included therein, the State of Connecticut, on account of any and all claims, damages, losses, litigation, expenses, counsel fees and compensation: (a) arising out of

injuries (including death) sustained by or alleged to have been sustained by the servants, employees or agents of the Owner, any municipality included therein, the State of Connecticut; and (b) arising out of injuries (including death) sustained by or alleged to have been sustained by the public, any or all persons on or near the Work, or by any other person or property, real or personal (including property of the Owner) caused in whole or in part by the acts or omissions of the Contractor, any Subcontractor, material suppliers or anyone directly or indirectly employed by them or any of them while engaged in the performance of this Contract and including any maintenance period or anyone for whose acts any of them may be liable.

4. Contractor shall indemnify, defend and save harmless the Owner, any municipality included therein, and the State of Connecticut, from all claims for payment of labor used on and materials furnished for the Work, including taxes applicable thereto, all claims for damages sustained or alleged to be sustained in consequence of any improper materials, implements or labor used, or resulting from any violation by the Contractor, its employees, subcontractors, material suppliers or agents of any law, municipal ordinance or any regulation, decree or order of any governmental agency having jurisdiction over the Work or any part thereof, or because of pauper or indigent employees brought to any city or town for the performance of the Work and having no settlement therein and all claims against the Owner, any municipality included therein, or the State of Connecticut for alleged infringement of patents by the Owner, any municipality included therein or the State of Connecticut or by reason of any method of construction used in the Work or the use of any appliance, process, apparatus or material which may be furnished under the Contract.

SC-6.21E

Delete paragraph 6.21E in its entirety and replace with the following:

E. Contractor shall not be responsible for the adequacy of the performance criteria or design criteria contained in the Contract Documents.

SC-6.21

Add the following paragraph at the end of paragraph 6.21:

6.22 *Excavations Near Underground Utility Facilities*

A. GENERAL

1. In compliance with the State of Connecticut Public Act No. 87-71 and section 16-345 of the Regulations of Connecticut State Agencies and any modifications or updates thereto, “An Act Concerning Excavations Near Underground Utility Facilities”, the Contractor shall not start any kind of excavation and/or blasting of rock activity near the location of any kind of public utility facility without having first ascertained the location of all such utilities in the area.

2. For this, Contractor shall notify CBYD (Call Before You Dig, Inc.)(Toll Free No. 1-800-922-4455) at least two (2) full working days in advance (excluding Saturday, Sunday and Holidays), but not more than one (1) month before starting any such work. Such notice shall include the name, address and telephone number of the person/agency performing the Work and the date and type of excavation. The CBYD will immediately transmit such information to the Utility Companies whose facilities may be affected. Utility Companies receiving notice shall mark-up the locations of their utilities on site and/or inform the Contractor if they do not have their utilities in the area. If the Contractor does not receive any information or mark-up of the locations on site, Contractor shall contact CBYD and verify if the Utility Companies have responded to Contractor’s call. Under no circumstances, shall the Contractor be allowed

to start any kind of excavation and/or blasting work prior to **obtaining all the necessary information regarding the location of underground utilities at the Site. It will** be the Contractor's responsibility to contact and have all utilities marked on Site prior to starting the Work. Contractor shall coordinate construction activities with all Utility Company Facility relocations and replacements. Contractor shall provide adequate support and protection of all existing facilities in accordance with the Utility Companies' standards. All utility relocations and replacements on Municipal property shall be paid for by the respective utility company. All utility facility relocations and replacements on private property shall be at the Contractor's expense.

3. In addition to contacting the CBYD, the Contractor shall also contact the applicable water company 48 hours prior to any blasting of rock or work in close proximity to the water main facilities.

4. Contractor should be aware that the contract drawings may not indicate all subsurface structures or utilities. Contractor shall be responsible for making all necessary all investigations including exploratory excavations, by hand digging, as Contractor deems necessary to uncover and determine the exact locations of utilities and structures and shall have no claims for delay damages due to encountering subsurface structures or utilities shown or not shown on the drawings.

B. RELATION TO WATER MAINS

1. The sanitary sewer must be laid with at least 10 feet horizontal or 18 inches vertical separation from any existing or proposed water main, and in accordance with "Guides for the Design of Wastewater Treatment Works", prepared by the NEIWPCC, latest edition, and the Connecticut Department of Health Services requirements. Whenever possible the sanitary sewer pipe shall cross below existing water mains. Should local conditions prevent such separations, a sewer may be laid closer if:

a. Both the sewer and water main are constructed of ductile iron or C900 PVC pipe with rubber compression gaskets. At a crossing this condition shall be met for a distance of 10 feet on each side of the water main. One full length of sewer pipe shall be centered on the water main so that both sewer joints will be as far from the water main as possible. Pipelines shall be installed in accordance with AWWA C600, latest revision. Sewer pipe shall be pressure tested in accordance with the applicable sections concerning cement-lined ductile iron sewer pipe of the Technical Specifications; or

b. The sewer line shall be encased in concrete for the entire length in which the required separations are not met. At a crossing the sewer line shall be encased in concrete for a distance of 10 feet on each side of the water main; or

c. The water main shall be relocated by the utility company, and at their expense, to provide the required separation and reconstructed with rubber compression gasket joint pipe. At a crossing this condition shall be met for a distance of 10 feet on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible.

C. GAS PIPELINES

1. 48 hours prior notice must be given by the Contractor to the respective Gas Company before starting construction of sewer pipelines in the vicinity of gas lines.

2. When excavating near gas pipelines, Contractor must follow procedures as outlined in the CBYD Excavator's Manual regarding digging around combustible, hazardous fluids or gas lines (natural gas, propane or gasoline). Hand digging is required once the paved surface is removed.

D. WATER

1. The Contractor shall provide and maintain facilities for an adequate supply of water suitable for use for construction purposes and for domestic use as required for the Work. All work, materials, equipment, appurtenances and accessories necessary for providing supplies of water at the site and including the cost of all water used, shall be borne by the Contractor. Upon completion of the Work, and before final acceptance, the Contractor shall remove all temporary piping and appurtenant work used for temporary water supply. Temporary water supply work shall be provided in accordance with the requirements of the governing Water Department and health authorities. The Contractor shall be responsible for providing all necessary water for construction purposes and for Contractor's potable use.

SC 6.23

Add the following paragraph at the end of paragraph 6.22:

6.23 *Sanitary Regulations*

A. Adequate sanitary conveniences for use of workers on the Site, properly secluded from public observation, shall be provided and maintained by the Contractor in accordance with the requirements of local and State health authorities and in such manner and at such points as shall be approved and their compliance with this paragraph shall be strictly enforced. Sanitary waste shall be treated and disposed of in a manner satisfactory to and as directed by the Owner and the local and State health authorities; under no circumstances shall sanitary wastes be allowed to flow on the surface of the ground.

B. Contractor shall rigorously prohibit the committing of nuisances upon the lanes or rights-of-way of the Owner, about the Project or upon adjacent public or private property.

C. The cost of the sanitary conveniences and maintaining same will not be paid for separately, but compensation will be considered to be included in the prices stipulated for the appropriate items of Work as listed in the bid.

ARTICLE 8. OWNER'S RESPONSIBILITIES

SC - 8.05 A.

Delete paragraph 8.05 A in its entirety and replace with the following:

A. Owner's duties with respect to providing access to lands and easements thereto 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.

SC-8.06

Delete paragraph 8.06 in its entirety.

SC - 8.11

Delete paragraph 8.11 in its entirety.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.03A.

Delete paragraph 9.03 A in its entirety and replace with the following :

A. Engineer will furnish a Resident Project Representative and assistants to assist Engineer in observing the performance of the Work. The duties and responsibilities of the Resident Project Representative will be as enumerated in the Engineer's Contract and will be made available to Contractor at the start of the Work.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

SC-10.01.A – After the first sentence insert a new sentence as follows: "The Engineer will issue and sign a Work Change Directive (WCD) to the Contractor outlining the scope of the change and addressing the Basis of Payment for the changed work whether agreed or to be negotiated. A Standard Form is available in EJCDC and shown attached (EJCDC C-940 Work Change Directive) that can be utilized for this purpose.

SC-10.04B

Add new paragraphs after 10.04A of the General Conditions which is to read as follows:

B. Actual additional bonding costs associated with the value of the Change Order will be compensable only when supported by written documentation by the bonding company that the Change Order requires an increase to the original Performance, Payment, Labor or Material Bond. The Contractor shall notify the bonding company at each $500,000 increase to the contract value as the cumulative result of change orders. A copy of the Consent of Surety must be provided to the Owner prior to the execution of any change order which exceeds each cumulative $500,000.

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

SC-11.01A.1.

Delete the second sentence in paragraph 11.01A.1. in its entirety and replace with the following:

Such employees shall include one foreman (unless agreed by the Owner and the Contractor prior to beginning Work).

Add the following new paragraph immediately after paragraph 11.01A.1:

a. Contractor shall establish, in the Contract Documents, the Direct Labor Cost percentage. This percentage, where approved by Owner, will be used in the determination of the Direct Labor Cost listed in the Change Order Form included in Part II of the Supplementary Conditions. The Direct Labor Costs are defined to include social security contributions, unemployment, excise and payroll taxes, workers' and workmen's compensation, health and retirement benefits, sick leave, vacation and holiday pay, and cost of premiums for all additional insurance required because of changes in the Work.

SC - 11.01 A.5

Delete the first sentence of paragraph 11.01A.5 and replace with the following:

5. All supplemental Costs are subject to the Owner's prior approval. Supplemental Costs shall include the following:

SC- 11.01.A.5.c

Delete existing language and replace with the following:

Payment for rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others. Payment shall be the fair rental price provided in the latest edition, at the time the work is performed, of the "Rental Rate Blue Book" as prepared and published by Equipment Watch, a copy of which is on file in the office of the Engineer. It is agreed that this rate includes any and all overhead and profit and no additional markup will be approved. The maximum hourly rate to be used in paying for equipment shall be the applicable monthly rate in the Rental Rate Blue Book, divided by 176 (176 working hours per month).

SC – 11.01 A.5.f.

Delete the text in parenthesis in the third and fourth lines of paragraph 11.01 A.5.f.

SC – 11.01 A. 5.h.

Delete paragraph 11.01 A.5.h in its entirety and replace with the following:

h. Minor expenses such as telephone service at the Site, express and courier services and similar petty cash items incurred in the performance of the Work.

SC-11.02A.

After the last sentence in paragraph 11.02A, add the following sentence:

Allowances shall be used by the Contractor only as previously agreed and approved by the Owner.

SC-11.03D.

Delete paragraph 11.03D. in its entirety and replace with the following:

D. The unit price of an item of Unit Price Work shall be subject to re-evaluation and adjustment to the extent required pursuant to the applicable Regulations of the Connecticut Department of Energy and Environmental Protection.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIME

SC-12.01C.1.

Delete paragraph 12.01C.1. in its entirety.

SC-12.01C.2.c**.**

In the last line of paragraph 12.01C.2.c., before the semicolon add the following words: "based on subcontractor's Cost of the Work";

After 2.f add section 2.g that states that "*The overhead and profit fees stated include all overhead cost, including home office and general administrative costs.*

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

SC-13.05A.

Add the following new paragraph immediately after paragraph 13.05A.:

B. If Owner stops Work under Paragraph 13.05A, Contractor shall not be entitled to an extension of Contract Time or an increase in Contract Price.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02.A.1 – At the end of the first sentence that ends with "Contract Documents." Add the following sentence "Applications *for Payment submitted by the Contractor shall be for the monthly period ending on the last day of each month*". at the end of this paragraph.

SC-14.02A.3

Add the following new paragraphs immediately after paragraph 14.02A.3:
4. Each Application for Payment submitted by the Contractor shall include a statement that complies with the requirements of Connecticut Public Act 09-146.

5. Each Application for Payment submitted by Contractor shall include certified payrolls from the Contractor and each Subcontractor. If a Subcontractor's work has been completed during the period covered by the Application for Payment, such Subcontractor's certified payroll shall be marked "final". If the Contractor or a Subcontractor has not completed its work on the Project but performed no work during the period covered by the Application for Payment, the certified payroll submitted by the Contractor or such Subcontractor shall reflect that no work was performed.

6. Non-recurring costs will be paid at the time of occurrence. Recurring costs will be paid in proportion to the percent of completion of the project.

7. The Owner will pay for materials stored and not yet incorporated into the work in accordance with Section 00820.01 – DEEP Construction Contract Provisions and the following conditions:

a) In the event that the Owner does agree to paying for stored materials, it will be expressly understood and agreed the following documentation will be provided:

    1. List of materials being stored

    2. Location of where materials are being stored

    3. Certificate of Insurance naming Owner and Agency Cities and Towns as additional insured as in MDC Insurance Form INS390.

    4. Written Consent of Surety to payment for stored materials in accord with Standard Form 1414 (Rev. 5-97) see attached.

b) It is expressly understood and agreed that the ownership of the material shall remain with the Contractor, as shall be the responsibility and cost for storage, maintenance, handling, insurance, etc. The balance of payment for this item will be made when the material is installed and approved for payment by the Owner in the normal manner. The Contractor hereby warrants and guarantees that payment for this material does not relieve them of any responsibility for same and that their bonding company has been notified of this Agreement and consents to payment being made under these terms.

c) Further, in the event the Contractor defaults or is otherwise terminated, for any reason, pursuant to the Contract, ownership of the material shall immediately revert to the Owner

without any claim of the Contractor. The Owner reserves the right, in the event of termination, to seek damages against the Contractor for reimbursement of the monies paid under this sub-line item if the materials are not turned over to the Owner or for damages if the materials are not in good condition upon being turned over to the Owner.

SC-14.02C.1.

Delete paragraph 14.02C.1. and add the following new paragraphs:

1. The Contractor shall be entitled to payment in accordance with the Engineer's recommendations thirty (30) days after Engineer's approval of Contractor's Application for Payment. Payment shall be subject to the provisions of Paragraph 14.02.D. *The Contractor shall review a pencil copy of the proposed Application for Payment with the Engineer prior to the formal submission of the monthly Application for Payment. The Engineer will review the Application for Payment and will be responsible for approval or rejection of the Application for Payment.*

2. Contractor shall pay all subcontractors within fifteen (15) days after Contractor receives payment from the Owner for Work performed by such subcontractors and included in the submitted Application for Payment. The Owner has the right to request and the Contractor shall promptly supply, evidence satisfactory to the Owner that subcontractors required to be paid hereunder have in fact been paid. If the Contractor fails to provide such evidence of payment upon Owner's request, the Owner shall be entitled to withdraw previous approvals and deduct the amount of such unevidenced payment from the next submitted Application for Payment. To the extent that the Contractor is entitled under the Contract to submit an Application for Payment for materials and equipment stored and not yet incorporated, the provisions of this paragraph shall apply.

3. Should Owner receive written notice from any subcontractor that the Contractor has failed to make payment to the subcontractor as required hereunder, Owner shall deliver to the Contractor a copy of such notice. If the Contractor fails to either (i) make payment to the subcontractor; or (ii) provide to the Owner a written and satisfactory explanation of Contractor's legitimate and good faith defense to payment within thirty (30) days after delivery of a copy of such notice, Owner may pay such claim and deduct the amount thereof from the balance due Contractor. Owner may also, with the written consent of Contractor, use any monies retained, due, or to become due under this Contract for the purpose of paying for both labor and materials for the Work.

4. Security is provided both by the Payment Bond and the power of Owner to retain any monies for payments to subcontractors, but payment by one shall in no way impair or discharge the liability of the other.

5. To the extent that lien rights exist in favor of any subcontractor, if any, all liens for work and materials may be paid off by Owner within a reasonable time after filing for record in accordance with State and local laws, a notice of such liens except where the claim on which the lien is filed is being litigated by Contractor. In such case, Owner may pay the amount of any final judgment or decree or any such claim of nonpayment within a reasonable time after such final judgment or decree shall be rendered.

6. All monies paid by Owner in settlement of claims of nonpayment made by subcontractors or liens as aforesaid, with the costs and expenses incurred by Owner in connection therewith, shall be charged to Contractor, shall bear interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank, and shall be deducted from the next payment due Contractor under the terms of this Contract.

SC-14.03A.

Add the following new paragraphs immediately after paragraph 14.03A.:

B. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.

C. Contractor shall defend, indemnify and save Owner and Engineer harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor either pay unpaid bills, of which Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon Owner to either Contractor or Contractor's Surety. In paying any unpaid bills of the Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.

SC – 14.05A.4

Delete paragraph 14.05A.4 in its entirety.

SC-14.07B.1.

Delete paragraph 14.07B.1. in its entirety and replace with the following:

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 - all 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 indicate in writing Engineer’s recommendation of payment and present the Application for Payment to Owner for payment. Thereupon, Engineer will 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. If the Application for Payment and accompanying documentation are in compliance with the requirements of the Contract Documents both as to form and substance, Owner shall, in accordance with the applicable State or local General Law, pay Contractor the amount recommended by Engineer.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

SC-15.02A.4.

Add the following new paragraph immediately after paragraph 15.02A.4.:

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 expressly permitted;

ARTICLE 16 - DISPUTE RESOLUTION

SC-16.01A

Delete paragraph 16.01A in its entirety and replace with the following:

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 this Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association (or such other recognized dispute resolution organization as is mutually satisfactory to the parties hereto) and the other party to the Contract.

SC-16.01C.3.

Add the following new sentence at the end of paragraph 16.01C.3:

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

ARTICLE 17 - MISCELLANEOUS

SC-17.06

Add the following new paragraphs immediately after paragraph 17.06:
17.07 Addresses

A. Both the address given in the Bid Form upon which this Agreement is founded, and Contractor's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered. The delivering at the above named place, or depositing in a postpaid wrapper directed to the first-named place, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon Contractor; and the date of said service shall be the date of such delivery or mailing. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor, and delivered to Owner and Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.

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 PART II 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.

17.09 Revenue Services Certificate and State Treasurer Statement

A. COMMISSIONER OF REVENUE SERVICES CERTIFICATE. The successful bidder, if a non-resident Contractor shall obtain prior to commencing the Work a certificate from the Commissioner of Revenue Services that the requirements of C.G.S. Section 12-430(7), which require a non-resident Contractor to deposit a sum equivalent to five percent (5%) of the total amount of the contract or a guaranty bond in a like amount with the Commissioner of Revenue Services to secure payment of the sales and use tax, have been met or do not apply to the Work.

B. In addition, the successful bidder, if a non-resident Contractor, must comply with the conditions set forth in C.G.S. Section 31-225 (I) regarding the filing of a bond with the Labor Commissioner to secure the payment of unpaid unemployment compensation contributions, interest and penalties due and attributable to the Work and must submit proof such compliance prior to commencing the Work.

C. STATEMENT OF STATE TREASURER. The successful bidder shall provide to the Owner a statement from the State Treasurer pursuant to Connecticut General Statutes ("C.G.S.") Section 31-286a that the successful bidder is not liable for any workers' compensation payments made pursuant to C.G.S. Section 31-355.

17.10 The Project is expected to be funded in part by the State of Connecticut. Neither the State nor any of its departments, agencies, or employees is or will be a party to this contract or any lower tier subcontract. The Contract Documents are subject to sections 22a-482-1 to 22a-482-4, inclusive, of the Regulations of Connecticut State Agencies. To the extent that any of the terms and conditions of the Contract are in conflict or are inconsistent with any provision of such Regulations, the provisions of such Regulations shall take precedence over such conflicting or inconsistent terms and conditions. In particular, and without limitation, the District cautions the Contractor to review and/or consult legal counsel regarding the following Articles and Regulations:

Article	Regulation
3	22a-482-4(g)
4	22a-482-4(g)5
6	22a-492-4(n) and 22a-482-4(o)
11	22a-482-4(k)
12	22a-482-4(k)
14	CGS 49-41a
15	22a-484-4(g) 6 and 7

SUPPLEMENTARY CONDITIONS PART 2

STATE AND LOCAL PROVISIONS

Federal, State and Local Government Provisions included herein, have been selected from those to which specific references have been made elsewhere in the Contract Documents. Each and every other provision of law or clause required by law to be inserted in this Contract shall be deemed to be also inserted herein in accordance with paragraph 3.01D of the Supplementary Conditions.

DOCUMENT 00820 ADDITIONAL ARTICLES

00820.01 CT DEEP CONSTRUCTION CONTRACT PROVISIONS. "Required Construction Contract Provisions under the Connecticut Department of Energy and Environmental Protection Clean Water Fund" are included following this page and made a part hereof. Should there appear to be a conflict between these "Provisions" and the intent and purpose of the Contract Documents, the CONTRACTOR shall seek clarification from the Engineer.

Should the Contractor fail to seek clarification from the Engineer on any matter which seems in conflict or inconsistent with the intent and purpose of the full contract, the Contractor will have assumed and thus, shall have, full responsibility for all liability, charges and costs for related work, actions and conditions resulting therefrom and Contractor shall save the Owner and State of Connecticut harmless from all costs and charges and any manner of claims, liability, lawsuits and other actions. The rights which the Owner has herein are in addition to each and every other right the Owner may have under the Contract Documents and by law.

In general, the "Required Construction Contract Provisions under the Connecticut Department of Energy and Environmental Protection Clean Water Fund" included herein shall have and take precedence in all determinations relating to conflicting Contract provisions and requirements.

NOTICE: Retainage for this project will be administered in accord with the procedure outlined in Section 22a-482-4(n)1 "RETENTION FROM PROGRESS PAYMENTS"

DEEP CONSTRUCTION CONTRACT PROVISIONS

REQUIRED CONSTRUCTION CONTRACT PROVISIONS
UNDER THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION'S
CLEAN WATER FUND

22a-482-4 (g) REQUIRED PROVISIONS FOR CONSTRUCTION CONTRACTS

Municipalities must include, when appropriate, the following clauses or their equivalent in each subagreement and may substitute other terms for "grantee" and "CONTRACTOR" in their subagreements.

22a-482-4 (g)(1) Supersession

The municipality and the CONTRACTOR agree that the following general provisions, or their equivalent, apply to eligible work to be performed under this contract and that these provisions supersede any conflicting provisions of this contract;

22a-482-4 (g)(2) Privity of contract

This contract is expected to be funded in part by the State of Connecticut. Neither the State, nor any of its departments, agencies, or employees is or will be a party to this contract or any lower tier subcontract. This contract is to be subject to regulations adopted in accordance with Section 22a-482 of the Connecticut General Statutes.

22a-482-4 (g)(3) Changes for contracts for construction

(A) The municipality may, at any time, without notice to any surety, by written order designated or indicated to be a change order, make any change in the work within the general scope of the subagreement, including but not limited to changes:

(i) In the specifications (including drawings and designs);
(ii) In the time, method, or manner of performance of the work;
(iii) In the municipality-furnished facilities, equipment, materials, services, or site; or
(iv) Directing acceleration in the performance of the work.

(B) A change order shall also be any other written or oral order (including direction, instruction, interpretation or determination) from the municipality which causes any change, provided the CONTRACTOR gives the municipality written notice stating the date, circumstances, and source of the order and that the CONTRACTOR regards the order as a change order.

(C) Except as provided in this clause, no order, statement, or conduct of the municipality shall be treated as a change under this clause or entitle the CONTRACTOR to an equitable adjustment.

(D) If any change under this clause causes an increase or decrease in the CONTRACTOR's cost or the time required to perform any part of the work under this contract, whether or not changed by any order, an equitable adjustment shall be made and the subagreement modified in writing. However, for claims based on defective specifications, no claim for any change under (B) above shall be allowed for any costs incurred more than 20 days before the CONTRACTOR gives written notice as required in paragraph (B). In the case of defective specifications for which the municipality is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the CONTRACTOR in attempting to comply with those defective specifications.

(E) If the CONTRACTOR intends to assert a claim for an equitable adjustment under this clause, he must, within thirty (30) days after receipt of a written change order under (A) of this change clause or the furnishing of a written notice under (B) of this clause, submit to the grantee a written statement setting forth the general nature and monetary extent of such claim. The municipality may extend the 30-day period. The statement of claim may be included in the notice

under (B) of this clause.

(F) No claim by the CONTRACTOR for an equitable adjustment shall be allowed if made after final payment under this contract.

22a-482-4 (g)(4) Changes for contracts for supplies

(A) The municipality may at any time, by a written order and without notice to the sureties, make changes within the general scope of this subagreement in any one or more of the following:

(i) Drawings, designs, or specifications, where the supplies to be furnished are to be specially manufactured for the municipality;
(ii) Method of shipment or packing; and
(iii) Place of delivery.

(B) If any change causes an increase or decrease in the cost or the time required to perform any part of the work under this subagreement, whether or not changed by any such order, an equitable adjustment shall be made in the subagreement price or delivery schedule, or both, and the subagreement shall be modified in writing. Any claim by the CONTRACTOR for adjustment under this clause must be asserted within 30 days from the date of receipt by the CONTRACTOR of the notification of change. If the municipality decides that the facts justify such action, the municipality may receive and act upon any such claim asserted at any time before final payment under this subagreement. Where the cost of property made obsolete or excess as a result of a change is included in the CONTRACTOR's claim for adjustment, the grantee shall have the right to prescribe the manner of disposition of such property. Nothing in this clause shall excuse the CONTRACTOR from proceeding with the subagreement as changed.

22a-482-4 (g)(5) Differing site conditions

(A) The CONTRACTOR shall promptly, and before such conditions are disturbed, notify the municipality in writing of:

(i) Subsurface or latent physical conditions at the site differing materially from those indicated in this subagreement; or

(ii) Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this subagreement. The municipality shall promptly investigate the conditions and, if it finds that conditions are materially different and will cause an increase or decrease in the CONTRACTOR's cost or the time required to perform any part of the work under this subagreement, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the subagreement modified in writing.

(B) No claim of the CONTRACTOR under this clause shall be allowed unless the CONTRACTOR has given notice required in (A) of this clause. However, the municipality may extend the prescribed time.

(C) No claim by the CONTRACTOR for an equitable adjustment shall be allowed if asserted after final payment under this subagreement.

22a-482-4 (g)(6) Suspension of work

(A) The municipality may order the CONTRACTOR, in writing, to suspend, delay, or interrupt all or any part of the work for such period of time as the municipality may determine to be appropriate for the convenience of the municipality.

(B) If the performance of all or any part of the work is suspended, delayed, or interrupted for an unreasonable period of time by an act of the municipality in administration of the contract, (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that

performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the CONTRACTOR, or for which an equitable adjustment is provided for or excluded under any other provision of the contract.

(C) No claim under this clause shall be allowed for any costs incurred more than 20 days before the CONTRACTOR notified the municipality in writing of the act or failure to act involved (this requirement does not apply to a claim resulting from a suspension order), and unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay, or interruption, but not later than the date of final payment under the contract.

22a-482-4 (g)(7) Termination

(A) This contract may be terminated in whole or in part in writing by either party in the event of substantial failure by the party to fulfill its obligations under this subagreement through no fault of the terminating party, provided that no termination may be effected unless the other party is given not less than ten (10) calendar days written notice (delivered by certified mail, return receipt requested) of intent to terminate and an opportunity for consultation with the terminating party prior to termination.

(B) This contract may be terminated in whole or in part in writing by the municipality for its convenience, provided that the CONTRACTOR is given not less than ten (10) calendar days written notice (delivered by certified mail, return receipt requested) of intent to terminate and an opportunity for consultation with the terminating party prior to termination.

(C) If termination for default is effected by the municipality, an equitable adjustment in the price provided for in this contract shall be made but no amount shall be allowed for anticipated profit on unperformed services or other work, and any payment due to the CONTRACTOR at the time of termination may be adjusted to cover any additional costs to the municipality because of the CONTRACTOR's default. If termination for default is effected by the CONTRACTOR, or if termination for convenience is effected by the municipality, the equitable adjustment shall include a reasonable profit for services or other work performed. The equitable adjustment for any termination shall provide for payment to the CONTRACTOR for services rendered and expenses incurred prior to the termination in addition to termination settlement costs reasonably incurred by the CONTRACTOR relating to commitments which had become firm prior to the termination.

(D) Upon receipt of a termination action pursuant to (A) or (B) above, the CONTRACTOR shall promptly discontinue all services affected (unless the notice directs otherwise), and deliver or otherwise make available to the recipient all data, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by the CONTRACTOR in performing this contract whether completed or in process.

(E) Upon termination under (A) or (B) of this clause the municipality may take over the work and may award another party a contract to complete the work under this contract.

(F) If, after termination for failure of the CONTRACTOR to fulfill contractual obligations, it is determined that the CONTRACTOR had not failed to fulfill contractual obligations, the termination shall be deemed to have been for the convenience of the municipality. In such event, adjustment of the price provided for in this contract shall be made as provided in (C) of this clause.

22a-482-4 (g)(8) Remedies

Except as may be otherwise provided in this contract, all claims, counter-claims, disputes, and other matters in question between the municipality and the CONTRACTOR arising out of or relating to this contract or the breach thereof will be decided by arbitration if the parties mutually agree or in a court of competent jurisdiction within the district in which the municipality is located.

22a-482-4 (g)(9) Price reduction for defective cost or pricing data

NOTE - This clause is applicable to any contract negotiated between the municipality and its CONTRACTOR in excess of $500,000; negotiated change orders in excess of $500,000 or 10 percent of the contract, whichever is less, affecting the price of a formally advertised, competitively awarded, fixed price contract; or any lower tier subcontract or purchase order in excess of $500,000 or 10 percent of the assistance agreement, whichever is less, under a contract other than a formally advertised, competitively awarded, fixed price subagreement. This clause is not applicable for contracts to the extent that they are awarded on the basis of effective price competition.

The CONTRACTOR and subcontractor, where appropriate, warrant that cost and pricing data submitted for evaluation with respect to negotiation of prices for negotiated contracts, lower tier subcontracts and change orders is based on current, accurate, and complete data supported by their books and records. If the municipality or the Commissioner determines that any price (including profit) negotiated in connection with this contract, any lower tier subcontract, or any amendment thereunder was increased by any significant sums because the data provided was incomplete, inaccurate, or not current at the time of submission, then such price, cost or profit shall be reduced accordingly, and the contract shall be modified in writing to reflect such reduction. Failure to agree on a reduction shall be subject to the remedies clause of this agreement.

NOTE - Since the contract is subject to reduction under this clause by reason of defective cost or pricing data submitted in connection with lower tier subcontracts, the CONTRACTOR may wish to include a clause in each lower tier subcontract requiring the lower tier subcontractor to appropriately indemnify the CONTRACTOR. It is also expected that any lower tier subcontractor subject to such indemnification will generally require substantially similar indemnification for defective cost or pricing data required to be submitted by lower tier CONTRACTORs.

22a-482-4 (g)(10) Audit; Access to records

(A) The CONTRACTOR shall maintain books, records, documents, and other evidence directly pertinent to performance on grant work under this contract in accordance with generally accepted accounting principles and practices consistently applied. The CONTRACTOR shall also maintain the financial information and data used by the CONTRACTOR in the preparation or support of the cost submission required under Section 22a-482-4(i)(8) for any negotiated contract or change order and a copy of the cost summary submitted to the municipality. The municipality and the Commissioner or any of his authorized representatives shall have access to all such books, records, documents, and other evidence for the purpose of inspection, audit and copying during normal business hours. The CONTRACTOR will provide proper facilities for such access and inspection.

(B) If this is a formally advertised, competitively awarded, fixed price contract, the CONTRACTOR agrees to make (A) through (F) of this clause applicable to all negotiated change orders and contract amendments affecting the contract price. In the case of all other types of prime contracts, the CONTRACTOR agrees to include (A) through (F) of this clause in all his subcontracts in excess of $10,000 and to make paragraphs (A) through (F) of this clause applicable to all change orders directly related to project performance.

(C) Audits conducted under this provision shall be in accordance with generally accepted auditing standards and established procedures and guidelines of the reviewing or audit departments and meeting the requirements of Section 20-282 of the Connecticut General Statutes.

(D) The CONTRACTOR agrees to disclose all

information and reports resulting from access to records under (A) and (B) of this clause.

(E) Records under (A) and (B) above shall be maintained and made available during performance on assisted work under this contract and until three years from the date of final State payment for the project. In addition, those records which relate to any dispute appeal arising under a grant assistance agreement, to litigation, to the settlement of claims arising out of such performance, or to costs or items to which an audit exception has been taken, shall be maintained and made available until three years after the date of resolution of such appeal, litigation, claim, or exception.

(F) This right of access clause (with respect to financial records) applies to:

(i) Negotiated prime subagreements;
(ii) Negotiated change orders or contract amendments in excess of $10,000 affecting the price of any formally advertised, competitively awarded, fixed price contract; and
(iii) Subcontracts or purchase orders under any contract other than a formally advertised, competitively awarded, fixed price contract. However, this right of access does not apply to a prime contract, lower tier subcontract, or purchase order awarded after effective price competition, except with respect to records pertaining directly to contract performance, (excluding any financial records of the CONTRACTOR); if there is any indication that fraud, gross abuse, or corrupt practices may be involved or if the contract is terminated for default or for convenience.

22a-482-4 (g)(11) Covenant against contingent fees

The CONTRACTOR warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the CONTRACTOR for the purpose of securing business. For breach or violation of this warranty the grantee shall have the right to annul this agreement without liability or, at its discretion, to deduct from the contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

22a-482-4 (g)(12) Gratuities

(A) If the municipality finds, after a notice and hearing, that the CONTRACTOR, or any of the CONTRACTOR's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise), to any official, employee, or agent of the municipality or the State, in an attempt to secure a contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this agreement, the municipality may, by written notice to the CONTRACTOR, terminate this agreement. The municipality may also pursue other rights and remedies that the law or this agreement provides. However, the existence of the facts on which the municipality bases such findings shall be in issue and may be reviewed in proceedings under the Remedies clause of this agreement.

(B) In the event this contract is terminated, as provided in (A) in this clause, the recipient may pursue the same remedies against the CONTRACTOR as it could pursue in the event of a breach of the contract by the CONTRACTOR and, as a penalty, in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the grantee) which shall be not less than three nor more than ten times the costs the CONTRACTOR incurs in providing any such gratuities to any such officer or employee.

22a-482-4 (g)(13) Responsibility of the CONTRACTOR

(A) The CONTRACTOR agrees to perform all work under this agreement in accordance with this agreement's designs, drawings, and specifications.

(B) The CONTRACTOR warrants and guarantees for a period of one (1) year from the date of substantial completion of the system that the completed system is free from all defects due to faulty materials, equipment or workmanship; and the CONTRACTOR shall promptly make whatever adjustments or corrections necessary to cure such defects, including repairs of any damage to other parts of the system resulting from such defects. The municipality shall give notice to the CONTRACTOR of observed defects with reasonable promptness. In the event that the CONTRACTOR fails to make adjustments, repairs, corrections or other work that may be made necessary by such defect, the municipality may do so and charge the CONTRACTOR the cost incurred. The performance bond shall remain in full force and effect through the guarantee period.

(C) The CONTRACTOR's obligations under this clause are in addition to the CONTRACTOR's other express or applied warranties under this agreement or State law and in no way diminish any other rights that the municipality may have against the CONTRACTOR for faulty material, equipment, or work.

22a-482-4 (g)(14) Final payment

Upon satisfactory completion of the work performed under this agreement, as a condition before final payment under this agreement, or as a termination settlement under this agreement, the CONTRACTOR shall execute and deliver to the municipality a release of all claims against the municipality arising under or by virtue of this agreement, except claims which are specifically exempted by the CONTRACTOR to be set forth therein. Unless otherwise provided in this agreement or by State law or otherwise expressly agreed to by the parties to this agreement, final payment under this agreement or settlement upon termination of this agreement shall not constitute a waiver of the municipality's claims against the CONTRACTOR or his sureties under this agreement or applicable performance and payment bonds.

22a-482-4(h) PROCUREMENT REQUIREMENTS - GENERAL

22a-482-4(h)(1) Applicability

This defines the responsibilities of the State and the municipality and the minimum procurement standards for each municipality's procurement system.

22a-482-4(h)(2) Municipality responsibility

(A) The municipality is responsible for the settlement and satisfactory completion in accordance with sound business judgment and good administrative practice of all contractual and administrative issues arising out of subagreements entered into under the assistance agreement. This includes issuance of invitations for bids or requests for proposals, selection of CONTRACTORs, award of subagreements, settlement of protests, claims, disputes and other related procurement matters.

(B) The municipality shall maintain a subagreement administration system to assure that CONTRACTORs perform in accordance with the terms, conditions and specifications of their subagreements.

(C) The municipality shall review its proposed procurement actions to avoid purchasing unnecessary or duplicative items.

(D) The municipality shall consider consolidating its procurement or dividing it into parts to obtain a more economical purchase.

(E) Where appropriate, the municipality shall make an analysis of lease versus purchase alternatives in its procurement actions.

(F) A municipality may request technical assistance from the Commissioner for the administration and enforcement of any subagreement awarded under this section. However, such assistance does not relieve the

municipality of its responsibilities under this section.

(G) A municipality may use innovative procurement methods or procedures only if it receives the Commissioner's prior written approval.

22a-482-4(h)(3) Municipality reporting requirements

The municipality shall request, in writing, the Commissioner's authorization to award each construction subagreement which has an aggregate value over $10,000. The request shall include:

(A) Name, address, telephone number and employee identification number of the construction CONTRACTOR;

(B) Amount of the award;

(C) Estimated starting and completion dates;

(D) Project number, name and site location of the project; and

(E) Copy of the tabulations of bids or offers and the name of each bidder or offeror.

22a-482-4(h)(4) Copies of contract documents.

The municipality must promptly submit to the Commissioner copies of any prime contract or modification thereof, and revisions to plans and specifications.

22a-482-4(h)(5) Limitations on subagreement award

(A) The municipality shall award subagreements only to responsible CONTRACTORs that possess the potential ability to perform successfully under the terms and conditions of a proposed procurement. A responsible CONTRACTOR is one that has:

(i) Financial resources, technical qualifications, experience, an organization and facilities adequate to carry out the project, or a demonstrated ability to obtain these;

(ii) Resources to meet the completion schedule contained in the subagreement;

(iii) A satisfactory performance record for completion of subagreements;

(iv) Accounting and auditing procedures adequate to control property, funds and assets; and

(v) Demonstrated compliance or willingness to comply with the civil rights, equal employment opportunity, labor laws and other statutory requirements.

(B) The municipality shall not make awards to CONTRACTORs who have been suspended or debarred by Connecticut State Agencies.

22a-482-4(h)(6) Violations.

The municipality shall refer violations of law to the local or State officials having the proper jurisdiction.

22a-482-4(h)(7) Competition

(A) The municipality shall conduct all procurement transactions in a manner that provides maximum open and free competition.

(B) Procurement practices shall not unduly restrict or eliminate competition. Examples of practices considered to be unduly restrictive include:

(i) Noncompetitive practices between firms;
(ii) Organizational conflicts of interest;
(iii) Unnecessary, experience and bonding requirements;
(iv) Local laws, ordinances, regulations or procedures which give local bidders or proposers preference over other bidders or proposers in evaluating bids or proposals; and
(v) Placing unreasonable requirements on firms in order for them to qualify to do business.

(C) The municipality may use a prequalification list(s) of persons, firms or products if it:

(i) Updates its prequalified list(s) at least every six months;
(ii) Reviews and acts on each request for prequalification made more than thirty (30) days before the closing date for receipt of proposals or bid opening; and
(iii) Gives adequate public notice of its prequalification procedures in accordance with the public notice procedures.

(D) A municipality may not use a prequalified list(s) of persons or firms if the procedure unnecessarily restricts competition.

22a-482-4(h)(8) Profit

(A) Municipalities must assure that only fair and reasonable profits are paid to CONTRACTORs awarded subagreements under State assistance agreements.

(B) The municipality shall negotiate profit as a separate element of price for each subagreement in which there is no price competition, or where price is based on cost analysis.

(C) Where the municipality receives two or more bids, profit included in a formally advertised, competitively bid, fixed price subagreement shall be considered reasonable.

(D) Off-the-shelf or catalog supplies are exempt from this section.

22a-482-4(h)(9) Use of small, minority, and women's businesses

The municipality must take affirmative steps to assure that small, minority, and women's businesses are used to the maximum extent practicable. The Commissioner may impose goals as conditions of financial assistances.

22a-482-4(h)(10) Privity of subagreement.

The State shall not be a party to any subagreement nor to any solicitation or request for proposals.

22a-482-4(h)(11) Documentation

(A) Procurement records and files for procurements in excess of $10,000 shall include the following:

(i) Basis for CONTRACTOR selection;
(ii) Written justification for selection of the procurement method;
(iii) Written justification for use of any specification which does not provide for maximum free and open competition;
(iv) Written justification for the type of subagreement;
(v) Basis for award cost or price, including a copy of the cost or price analysis made and documentation of negotiations; and
(vi) A municipality must state the reasons in writing for rejecting any or all bids and the justification for procurements on a noncompetitively negotiated basis and make them available for public inspection.

22a-482-4(h)(12) Specifications

(A) Nonrestrictive specifications.

(i) No specification for bids or statement of work in connection with such works shall be written in such a manner as to contain proprietary, exclusionary or discriminatory requirements other than those based upon performance, unless such requirements are necessary to test or demonstrate a specific thing or to provide for necessary interchangeability of parts and equipment, **or at least two brand names** or trade names of comparable quality or utility are listed and are followed by the words "or equal". If brand or trade names are specified, the municipality must be prepared to identity to the Commissioner, or in any protest action, the salient requirements (relating to the

minimum needs of the project) which must be met by any offeror. The single base bid method of solicitation for equipment and parts for determination of a low, responsive bidder may not be utilized. With regard to materials, if a single material is specified, the municipality must be prepared to substantiate the basis for the selection of the material.

(ii) Project specifications shall, to the extent practicable, provide for maximum use of structures, machines, products, materials, construction methods, and equipment which are readily available through competitive procurement, or through standard or proven production techniques, methods, and processes.

(B) Sole source restriction. A specification shall not require the use of structures, materials, equipment, or processes which are known to be available only from a sole source, unless the Commissioner determines in advance that the municipality's engineer has adequately justified in writing that the proposed use meets the particular project's minimum needs or the Commissioner determines that use of a single source is necessary to promote innovation.

(C) Experience clause restriction. The general use of experience clauses requiring equipment manufacturers to have a record of satisfactory operation for a specified period of time or of bonds or deposits to guarantee replacement in the event of failure is restricted to special cases where the municipality's engineer adequately justifies any such requirement in writing. Where such justification has been made, submission of a bond or deposit shall be permitted instead of a specified experience period. The period of time for which the bond or deposit is required should not exceed the experience period specified.

22a-482-4(h)(13) Force account work

(A) The municipality must receive the Commissioner's prior written approval for use of the force account method for any planning, design work or construction work.

(B) The Commissioner may approve the force account method upon the municipality's demonstration that it possesses the necessary competence required to accomplish such work and that the work can be accomplished more economically by use of the force account method, or emergency circumstances dictate its use.

(C) Use of the force account method for construction work shall generally be limited to minor portions of a project.

22a-482-4(h)(14) Code of conduct

(A) The municipality shall maintain a written code or standards of conduct which shall govern the performance of its officers, employees, or agents engaged in the award and administration of subagreements supported by State funds. No employee, officer or agent of the municipality shall participate in the selection, award or administration of a subagreement supported by State funds if a conflict of interest, real or apparent, would be involved.

(B) Such a conflict would arise when:

(i) Any employee, officer or agent of the municipality, any member of the immediate families, or their partners, have a financial or other interest in the firm selected for award; or

(ii) An organization which may receive or has been awarded a subagreement employs, or is about to employ, any person under (B)(i) of this Section.

(C) The municipality's officers, employees or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from CONTRACTORs, potential CONTRACTORs or other parties to subagreements.

(D) Municipalities may set minimum rules where the financial interest is not substantial or the gift is an unsolicited item of nominal value.

(E) To the extent permitted by State or local law or regulations, the municipality's code of

conduct shall provide for penalties, sanctions or other disciplinary actions for violations of the code by the municipality's officers, employees or agents or by CONTRACTORs or their agents.

22a-482-4(h)(15) Payment to consultants

(A) For all State assistance agreements, the State will limit its participation in the salary rate (excluding overhead) paid to individual consultants retained by a municipality or by a municipality's CONTRACTORs or subcontractors to the maximum daily rate for a GS-18 federal employee. (Municipality's may, however, pay CONTRACTORs and subcontractors more than this amount.) This limitation applies to consultation services of designated individuals with specialized skills who are paid at a daily or hourly rate. The rate does not include transportation and subsistence costs for travel performed; municipalities will pay these in accordance with their normal travel reimbursement practices.

(B) Subagreements with firms for services which are awarded using these procurement requirements are not affected by this limitation.

22a-482-4(h)(16) Cost and price considerations

(A) The municipality shall conduct a cost analysis of all negotiated change orders and all negotiated subagreements estimated to exceed $10,000.

(B) The municipality shall conduct a price analysis of all formally advertised procurements estimated to exceed $10,000 if there are fewer than three bidders.

(C) For negotiated procurement, CONTRACTORs and subcontractors shall submit cost or pricing data in support of their proposals to the municipality.

22a-482-4(h)(17) Small purchases

(A) Small Purchase Procurement. If the aggregate amount involved in any one procurement transaction does not exceed $10,000, including estimated handling and freight charges, overhead and profit, the municipality may use small purchase procedures.

(B) Small Purchase Procedures. Small purchase procedures are relatively simple procurement methods that are sound and appropriate for procurement of services, supplies or other property costing in the aggregate not more than $10,000.

(C) Requirements for Competition.

(i) Municipalities shall not divide a procurement into smaller parts to avoid the dollar limitation for competitive procurement.
(ii) Municipalities shall obtain price or rate quotations from an adequate number of qualified sources.

22a-482-4(h)(18) Negotiation and award of subagreements

(A) Unless the request for proposals states that award may be based on initial offers alone, the municipality must conduct meaningful negotiations with the best qualified offerors with acceptable proposals within the competitive range, and permit revisions to obtain best and final offers. The best qualified offerors must have equal opportunities to negotiate or revise their proposals. During negotiations, the municipality must not disclose the identity of competing offerors or any information from competing proposals.

(B) The municipality must award the subagreement to the responsible offeror whose proposal is determined in writing to be the most advantageous to the municipality, taking into consideration price and other evaluation criteria set forth in the request for proposals.

(C) The municipality must promptly notify unsuccessful offerors that their proposals were rejected.

(D) The municipality must document its

procurement file to indicate how proposals were evaluated, what factors were used to determine the best qualified offerors within the competitive range, and what factors were used to determine the subagreement award.

22a-482-4(h)(19) Optional selection procedure for negotiation and award of subagreement for architectural and engineering services

(A) The municipality may evaluate and select an architect or engineer using the procedures in this subdivision in place of the procedures in "Negotiation and award of subagreements" in subdivision (18).

(B) The municipality may use responses from requests for statement of qualifications to determine the most technically qualified architects or engineers.

(C) After selecting and ranking the most qualified architects or engineers, the municipality will request technical proposals from those architects or engineers and inform them of the evaluation criteria the municipality will use to rank the proposals.

(D) The municipality shall then select and determine, in writing, the best technical proposal.

(E) After selecting the best proposal, the municipality shall attempt to negotiate fair and reasonable compensation with that offeror.

(F) If the municipality and the offeror of the best proposal cannot agree on the amount of compensation, the municipality shall formally terminate negotiations with that offeror. The municipality shall then negotiate with the offeror with the next best proposal. This process will continue until the municipality reaches agreement on compensation with an offeror with an acceptable proposal. Once the municipality terminates negotiations with an offeror, the municipality cannot go back and renegotiate with that offeror.

22a-482-4(h)(20) Noncompetitive negotiation procurement method

Noncompetitive negotiation may be used only when the award of a subagreement is not feasible under small purchase, formal advertising, or competitive negotiation procedures. The municipality may award a noncompetitively negotiated subagreement only under the following circumstances:

(A) The item is available only from a single source;

(B) A public exigency or emergency exists and the urgency for the requirement will not permit a delay incident to competitive procurement; or

(C) After solicitation from a number of sources, competition is determined to be inadequate.

22a-482-4(h)(21) Use of the same architect or engineer during construction

(A) If the municipality is satisfied with the qualifications and performance of the architect or engineer who provided any or all of the planning or design services for the project, it may wish to retain that firm or individual during construction of the project. The municipality may do so without further public notice and evaluation of qualifications provided that it received financial assistance for the planning and/or design services and selected the architect or engineer in accordance with these procurement regulations.

(B) However, if the municipality uses the procedures in (A) to retain an architect or engineer, any construction subagreements between the architect or engineer and the municipality must meet the procurement provisions of section 22a-482-4(h)(5) of this section..

22a-482-4(h)(22) Negotiation of subagreements

(A) Formal advertising, with adequate purchase descriptions, sealed bids, and public openings shall be the required method of procurement unless negotiation under (B) of this section is necessary to accomplish sound procurement.

(B) All negotiated procurement shall be conducted in a manner to provide to the maximum practicable extent open and free competition appropriate to the type of project work to be performed. The municipality is authorized to negotiate subagreements if any of the following conditions exist:

(i) Public exigency will not permit the delay incident to formally advertised procurement (e.g. an emergency procurement);
(ii) The aggregate amount involved does not exceed $10,000;
(iii) The material or service to be procured is available from only one person or entity. If the procurement is expected to aggregate more than $10,000, the municipality must document its file with a justification of the need for noncompetitive procurement, and provide such documentation to the Commissioner on request;
(iv) The procurement is for personal or professional services (including architectural or engineering services) or for any service that a university or other educational institution may render;
(v) No responsive, responsible bids at acceptable price levels have been received after formal advertising, and the Commissioner's prior written approval has been obtained;
(vi) The procurement is for materials or services where the price is established by law;
(vii) The procurement is for technical items or equipment requiring standardization and interchangeability of parts with existing equipment; or

(viii) The procurement is for experimental, developmental or research services.

22a-482-4(h)(23) Enforcement

If the Commissioner determines that the municipality has failed to comply with any of these procurement provisions, he or she may impose any of the following sanctions:

(A) The grant may be terminated or annulled under Section 22a-482-4(t).

(B) Project costs directly related to the noncompliance may be disallowed.

(C) Payment otherwise due to the municipality of up to 10 percent may be withheld.

(D) Project work may be suspended under Sec. 22a-482-4(g) (5).

(E) A non-complying municipality may be found non-responsible or ineligible for future state funding assistance or a non-complying CONTRACTOR may be found non-responsible or ineligible for approval for future contract award under state grants.

(F) An injunction may be entered or other equitable relief afforded by a court of appropriate jurisdiction.

(G) Such other administrative or judicial action may be instituted if it is legally available and appropriate.

22a-482-4(h)(24) Contract Enforcement

Commissioner authority. At the request of a municipality, the Commissioner is authorized to provide technical and legal assistance in the administration and enforcement of any contract related to pollution abatement facilities for which a State grant was made and to intervene in any civil action involving the enforcement of such contracts, including contract disputes which are the subject of either arbitration or court action in accordance with the requirements of Section 22a-482-4(f)(1).

22a-482-4 (j) CONSTRUCTION CONTRACT PROCUREMENT REQUIREMENTS

(This section applies to construction contracts in excess of $10,000 awarded by municipalities for any construction projects.)

22a-482-4 (j)(1) Type of Contract

Each contract shall be a fixed price (lump sum or unit price or a combination of the two) contract, unless the Commissioner gives advance written approval for the municipality to use some other acceptable type of contract. The cost-plus-percentage-of-cost contract shall not be used in any event.

22a-482-4 (j)(2) Formal Advertising

Each contract shall be awarded after formal advertising, unless negotiations are permitted in accordance with Sec. 22a-482-4(h)(18). Formal advertising shall be in accordance with the following:

(A) Adequate public notice. The municipality will cause adequate notice to be given of the solicitation by publication in newspapers or journals of general circulation beyond the municipality's locality (statewide, generally), inviting bids on the project work and stating the method by which bidding documents may be obtained or examined. Where the estimated cost of construction is $10 million or more, the municipality should publish the notice in trade journals of nationwide distribution. The municipality may solicit bids directly from bidders if it maintains a bidders list;

(B) Adequate time for preparing bids. Adequate time, generally not less than 30 days, must be allowed between the date when public notice is first published and the date by which bids must be submitted. Bidding documents (including specifications and drawings) shall be available to prospective bidders from the date when such notice is first published;

(C) Adequate bidding documents. The municipality shall prepare a reasonable number of bidding documents (invitations for bids) and shall furnish them upon request on a first-come, first-served basis. The municipality shall maintain a complete set of bidding documents and shall make them available for inspection and copying by any party. The bidding documents shall include:

(i) A complete statement of the work to be performed, including necessary drawings and specifications, and the required completion schedule;
(ii) The terms and conditions of the contract to be awarded;
(iii) A clear explanation of the method of bidding and the method of evaluation of bid prices, and the basis and method for award of the contract;
(iv) Responsibility requirements or criteria which will be employed in evaluating bidders;
(v) The following statement:

Any contract or contracts awarded under this invitation for bids are expected to be funded in part by the State of Connecticut (Department of Energy and Environmental Protection). Neither the State of Connecticut nor any of its departments, agencies or employees is or will be a party to this invitation for bids or any resulting contract. This procurement will be subject to the requirements contained in Section 22a-482-4, (h), (j) and (o) of the regulations of Connecticut State Agencies;

(vi) A copy of Sec. 22a-482-4, (h), (j) and (o); and
(vii) The prevailing State Wage Determination as applicable.

(D) Sealed bids. The municipality shall provide for bidding by sealed bid and for the safeguarding of bids received until public opening.

(E) Addenda to bidding documents. If a municipality desires to amend any part of the bidding documents (including drawings and specifications) during the period when bids are being prepared, the addenda shall be communicated in writing to all firms which have obtained bidding documents at least five (5) working days prior to the bid opening.

(F) Bid modifications. A firm which has

submitted a bid shall be allowed to modify or withdraw its bid before the time of bid opening.

(G) Public opening of bids. The municipality shall provide for a public opening of bids at the place, date and time announced in the bidding documents.

(H) Award to the low, responsive, responsible bidder.

(i) After bids are opened, the municipality shall evaluate them in accordance with the methods and criteria set forth in the bidding documents.

(ii) The municipality may reserve the right to reject all bids. Unless all bids are rejected for good cause, award shall be made to the low, responsive, responsible bidder.

(iii) If the municipality intends to make the award to a firm which did not submit the lowest bid, it shall prepare a written statement before any award, explaining why each lower bidder was deemed non-responsible or non-responsive. The Municipality shall retain such statement in its files and forward a copy to the Commissioner for review.

(iv) Local laws, ordinances, regulations or procedures which are designed or which operate to give local bidders preference over other bidders shall not be employed in evaluating bids.

(v) If an unresolved procurement review issue or a protest relates only to award of a subcontract or procurement of an item under the prime contract, and resolution of that issue or protest is unduly delaying performance of the prime contract, the Commissioner may authorize award and performance of the prime contract before resolution of the issue or protest, if the Commissioner determines that resolution of the protest will not affect the placement of the prime contract bidders and will not materially affect initial performance of the prime contract; and that award of the prime contract is in the State's best interest, will not materially affect resolution of the protest, and is not barred by State or local law.

(vi) The municipality shall not reject a bid as non-responsive for failure to list or otherwise indicate the selection of a subcontractor(s) or equipment, unless the municipality has unambiguously stated in the solicitation documents that such failure to list shall render a bid non-responsive and shall cause rejection of a bid.

22a-482-4 (k) NEGOTIATION OF CONTRACT AMENDMENTS (CHANGE ORDERS)

<u>22a-482-4 (k)(1)</u>

The Municipality is responsible for the negotiation of construction contract change orders. This function may be performed by the municipality directly or, if authorized, by its engineer. During negotiations with the CONTRACTOR the municipality shall:

(A) Make certain that the CONTRACTOR has a clear understanding of the scope and extent of work and other essential requirements;

(B) Assure that the CONTRACTOR demonstrates that he will make available or will obtain the necessary personnel, equipment and materials to accomplish the work within the required time; and

(C) Assure a fair and reasonable price for the required work.

<u>22a-482-4 (k)(2)</u>

The contract price or time may be changed only by a change order. When negotiations are required, they shall be conducted in accordance with section 22a-482(k)(3) and (4) as appropriate. The value of any work covered by a change order or of any claim for increase or decrease in the

contract price shall be determined by the method set forth in paragraphs (2)(A) through (2)(C) of this section, whichever is most advantageous to the municipality.

(A) Unit prices.

(i) Original bid items. Unit prices previously approved are acceptable for pricing changes of original bid items. However, when changes in quantities exceed 15 percent of the original bid quantity and the total dollar change of that bid item is significant, the municipality shall review the unit price to determine if a new unit price should be negotiated.

(ii) New items. Unit prices of new items shall be negotiated.

(B) A lump sum to be negotiated.

(C) Cost reimbursement. The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work plus an amount to be agreed upon to cover the cost of general overhead and profit to be negotiated.

22a-482-4 (k)(3)

For each change order not in excess of $100,000 the CONTRACTOR shall submit sufficient cost and pricing data to the municipality to enable the municipality to determine the necessity and reasonableness of costs and amounts proposed, and the allowability and eligibility of costs proposed.

22a-482-4 (k)(4)

For each change order in excess of $100,000, the CONTRACTOR shall submit to the municipality for review sufficient cost and pricing data as described in paragraphs (4)(A) through (4)(E) of this section to enable the municipality to ascertain the necessity and reasonableness of costs and amounts proposed, and the allowability and eligibility of costs proposed.

(A) The CONTRACTOR shall certify that proposed costs reflect complete, current, and accurate cost and pricing data applicable to the date of the change order.

(B) In addition to the specific elements of cost, the estimated amount of profit shall be set forth separately in the cost summary for fixed price change orders and a specific total dollar amount of profit will be set forth separately in the cost summary for cost reimbursement change orders.

(C) The municipality may require more detailed cost data in order to substantiate the reasonableness of proposed change order costs. The Commissioner may, on a selected basis, perform a detailed cost analysis on any change order.

(D) For costs under cost reimbursement change orders, the CONTRACTOR shall have an accounting system which accounts for such costs in accordance with generally accepted accounting principles. This system shall provide for the identification, accumulation and segregation of allowable and unallowable change orders. Allowable change order costs shall be determined in accordance with Sections 22a-482-4(a), (b), (c), (d), and (e). The CONTRACTOR must propose and account for such costs in a manner consistent with his normal accounting procedures.

(E) Change orders awarded on the basis of review of a cost element summary and a certification of complete, current, and accurate cost and pricing data shall be subject to downward renegotiation and recoupment of funds where a subsequent audit substantiates that such certification was not based on complete, current and accurate cost and pricing data.

22a-482-4 (k)(5) Review by Commissioner.

The municipality shall submit, before the execution of any change order in excess of $100,000, to the Commissioner for review and approval:

(A) The cost and pricing data the

CONTRACTOR submitted;

(B) A certification of review and acceptance of the CONTRACTOR's cost or price; and

(C) A copy of the proposed change order.

22a-482-4 (k)(6) Profit.

The objective of negotiations shall be the exercise of sound business judgment and good administrative practice including the determination of a fair and reasonable profit based on the CONTRACTOR's assumption of risk and input to total performance and not merely the application of a predetermined percentage factor. For the purpose of negotiated change orders to construction contracts profit is defined as the net proceeds obtained by deducting all allowable costs (direct and indirect) from the price. The municipality should review the estimate of profit as it reviews all other elements of price.

22a-482-4 (k)(7) Related work.

Related work shall not be split into two amendments or change orders merely to keep it under $100,000 and thereby avoid the requirements of (4) of this section. For change orders which include both additive and deductive items:

(A) If any single item (additive or deductive) exceeds $100,000 the requirements of (4) of this section shall be applicable;

(B) If no single additive or deductive item has a value of $100,000 but the total price of the change order is over $100,000, the requirements of (4) of this section shall be applicable; and

(C) If the total of additive items of work in the change order exceeds $100,000 or the total of deductive items of work in the change order exceeds $100,000 and the net price of the change order is less than $100,000, the requirements of (4) of this section shall be applicable.

22a-482-4 (1) SUBCONTRACTS UNDER CONSTRUCTION CONTRACTS.

22a-482-4 (1)(1)

The award or execution of subcontracts by a prime CONTRACTOR under a construction contract awarded to the prime CONTRACTOR by the municipality, and the procurement and negotiation procedures used by prime CONTRACTORs in awarding or executing subcontracts are not required to comply with any of the provisions, selection procedures, policies or principles set forth in Section 22a-482-4(h) or (j) except those specifically stated in this section. In addition, the bid protest procedures of Section 22a-482-4(o) are not available to parties executing subcontracts with prime CONTRACTORs except as specifically provided in that section.

22a-482-4 (1)(2)

The award or execution of subcontracts by a prime CONTRACTOR under a formally advertised, competitively bid, fixed price construction contract awarded to the prime CONTRACTOR by the municipality, and the procurement and negotiation procedures used by such prime CONTRACTORs in awarding or executing such subcontracts must comply with any municipality procurement system, State small, minority and women's business policy, (Section 22a-482-4(h)(9)), negotiation of contract amendments (Section 22a-482-4(k)), and clauses (8) and (9) of Section 22a-482-4(g).

22a-482-4 (m) PROGRESS PAYMENTS TO CONTRACTORS

22a-482-4 (m)(1)

Except as State law otherwise provides, municipalities must make prompt progress payments to prime CONTRACTORs and prime CONTRACTORs should make prompt progress payments to subcontractors and suppliers for eligible construction, material, and equipment costs, including those of undelivered, specifically manufactured equipment, incurred under a contract under this program. The Clean Water Fund shall only be obligated to pay the municipality amounts that the municipality is

actually going to pay CONTRACTORs..

22a-482-4 (m)(2) Conditions of progress payments.

For purposes of this section, progress payments are defined as follows:

(A) Payments for work in place;

(B) Payments for materials or equipment which have been delivered to the construction site, or which are stockpiled in the vicinity of the construction site, in accordance with the terms of the contract, when conditional or final acceptance is made by or for the municipality. The municipality shall assure that items for which progress payments have been made are adequately insured and are protected through appropriate security measures. Costs of such insurance and security are allowable costs; or

(C) Payments for undelivered specifically manufactured items or equipment (excluding off-the-shelf or catalog items) as work on them progresses. Such payments must be made if provisions therefore are included in the bid and contract documents. Such provisions may be included at the option of the municipality only when all of the following conditions exist:

(i) The equipment is so designated in the project specifications;

(ii) The equipment to be specifically manufactured for the project could not be readily utilized on nor diverted to another job; and

(iii) A fabrication period of more than 6 months is anticipated.

22a-482-4 (m)(3) Protection of progress payments made for specifically manufactured equipment.

The municipality will assure protection of the State's interest in progress payments made for items or equipment referred to in (2)(C) of this section. The protection must be acceptable to the municipality and must take the form of:

(A) Securities negotiable without recourse, condition or restrictions, a progress payment bond, or an irrevocable letter of credit provided to the municipality through the prime CONTRACTOR by the subcontractor or supplier; and

(B) For items or equipment in excess of $200,000 in value which are manufactured in a jurisdiction in which the Uniform Commercial Code is applicable, the creation and perfection of a security interest under the Uniform Commercial Code which is reasonably adequate to protect the interests of the municipality.

22a-482-4 (m)(4) Limitations on progress payments for specifically manufactured equipment.

(A) Progress payments made for specifically manufactured equipment or items shall be limited to the following:

(i) A first payment upon submission by the prime CONTRACTOR of shop drawings for the equipment or items in an amount not exceeding 15 percent of the contract or item price plus appropriate and allowable higher tier costs; and

(ii) Subsequent to the municipality's release or approval for manufacture, additional payments not more frequently than monthly thereafter up to 75 percent of the contract or item price plus appropriate and allowable higher tier costs. However, payment may also be made in accordance with the contract and grant terms and conditions for ancillary onsite work before delivery of the specifically manufactured equipment or items.

(B) In no case may progress payments for undelivered equipment or items under (4)(A)(i) or (4)(A)(ii) of this section be made in an amount greater than 75 percent of the cumulative incurred costs allocable to contract performance with respect to the equipment or items. Submission of a request for any such progress payments must be

accompanied by a certification furnished by the fabricator of the equipment or item that the amount of progress payment claimed constitutes not more than 75 percent of cumulative incurred costs allocable to contract performance and, in addition, in the case of the first progress payment request a certification that the amount claimed does not exceed 15 percent of the contract or item price quoted by the fabricator.

(C) As used in this section, the term "costs allocable to contract performance" with respect to undelivered equipment or items includes all expenses of contract performance which are reasonable, allocable to the contract, consistent with sound and generally accepted accounting principles and practices consistently applied and which are not excluded by the contract.

22a-482-4 (m)(5) Enforcement.

A subcontractor or supplier which is determined by the Commissioner to have frustrated the intent of the provisions regarding progress payments for major equipment or specifically manufactured equipment through intentional forfeiture of its bond or failure to deliver the equipment may be determined nonresponsible and ineligible for further work under State funded projects.

22a-482-4 (m)(6) Contract provisions.

Where applicable, appropriate provisions regarding progress payments must be included in each contract and subcontract.

22a-482-4 (m)(7) Implementation.

The foregoing progress payments policy should be implemented in invitations for bids for project funded by the Clean Water Fund. If provision for progress payments is made after contract award, it must be for consideration that the municipality deems adequate.

22a-482-4 (n) RETENTION FROM PROGRESS PAYMENTS

22a-482-4 (n)(1)

The municipality may retain a portion of the amount otherwise due the CONTRACTOR. The amount the municipality retains shall be limited to the following:

(A) Withholding of not more than 5 percent of the payment claimed until work is 50 percent complete;

(B) When work is 50 percent complete, reduction of the withholding to 2 percent of the dollar value of all work satisfactorily completed to date, provided that the CONTRACTOR is making satisfactory progress and there is no specific cause for greater withholding;

(C) When the work is substantially complete (operational or beneficial occupancy), the withheld amount shall be further reduced below 2 percent to only that amount necessary to assure completion;

(D) The municipality may reinstate up to 5 percent withholding if the municipality determines, at its discretion, that the CONTRACTOR is not making satisfactory progress or there is other specific cause for such withholding; and

(E) The municipality may accept securities negotiable without recourse, condition or restrictions, a release of retainage bond, or an irrevocable letter of credit provided by the CONTRACTOR instead of all or part of the cash retainage.

22a-482-4 (n)(2)

The foregoing retention policy shall be implemented with respect to all construction projects. Appropriate provision to assure compliance with this policy must be included in the bid documents for such projects initially or by addendum before the bid submission date and as a special condition in the funding agreement or in an amendment which is issued by the Commissioner.

22a-482-4 (n)(3)

A municipality which delays disbursement to CONTRACTORs of funds will be required to

credit to the Clean Water Fund all interest earned on those funds and will be responsible for any and all tax law violations which occur as a result of their actions.

22a-482-4 (o) PROTESTS

22a-482-4 (o)(1) General

A protest based upon an alleged violation of the procurement requirements may be filed against a municipality's procurement action by a party with an adversely affected direct financial interest. Any such protest must be received by the municipality within the time period in (2)(A) of this section. The municipality is responsible for resolution of the protest before taking the protested action, in accordance with (4) of this section, except as otherwise provided by (9) of this section or 22a-482-4(j)(2)(H)(v).

22a-482-4 (o)(2) Time limitations

(A) A protest under (4) of this section should be made as early as possible during the procurement process to avoid disruption of or unnecessary delay to the procurement process. A protest authorized by (4) of this section must be received by the municipality within one week after the basis for the protest is known or should have been known, whichever is earlier.

(i) In the case of an alleged violation of the specification requirements of Section 22a-482-4(h)(12), relating to specifications (e.g., that a product fails to qualify as an "or equal") a protest need not be filed prior to the opening of bids. The municipality may resolve the issue before receipt of bids or proposals through a written or other formal determination, after notice and opportunity to comment is afforded to any party with a direct financial interest.

(ii) When an alleged violation of the specification requirements of Section 22a-482-4(h)(12) first arises subsequent to the receipt of bids or proposals, the municipality must decide the protest if the protest was received by the municipality within one week of the time that the municipality's written or other formal notice is first received.

(B) A protest appeal authorized by this section must be filed in a court of competent jurisdiction within the locality of the municipality within one week after the complainant has received the municipality's determination.

(C) If a protest is mailed, the complaining party bears the risk of nondelivery within the required time period. All documents transmitted in accordance with this section shall be mailed by certified mail (return receipt requested) or otherwise delivered in a manner which will objectively establish the date of receipt. Initiation of protest actions under (4) or (5) of this section may be made by brief telegraphic notice accompanied by prompt mailing or other delivery of a more detailed statement of the basis for the protest. Telephone protests will not be considered.

22a-482-4 (o)(3) Other initial requirements

(A) The initial protest document must briefly state the basis for the protest and should:

(i) Refer to the specific portions of these regulations which allegedly prohibit the procurement action;
(ii) Specifically request a determination pursuant to this section;
(iii) Identify the specific procurement document(s) or portion(s) of them in issue; and
(iv) Include the name, telephone number, and address of the person representing the protesting party.

(B) The party filing the protest must concurrently transmit a copy of the initial protest document and any attached documentation to all other parties with a direct financial interest which may be adversely affected by the determination of the protest (all bidders or proposers who appear to have a substantial and reasonable prospect of receiving an award if the protest is denied or sustained) and to the Commissioner.

22a-482-4 (o)(4) Municipality determination

(A) The municipality is responsible for the initial resolution of protests based upon alleged violations of the procurement requirements.

(B) When the municipality receives a timely written protest, it must defer the protested procurement action in accordance with (7) of this section and:

(i) Afford the complaining party and interested parties an opportunity to present arguments in support of their views in writing or at a conference or other suitable meeting (such as a city council meeting);
(ii) Inform the complainant and other interested parties of the procedures which the municipality will observe for resolution of the protest;
(iii) Obtain an appropriate extension of the period for acceptance of the bid and bid bond(s) of each interested party, where applicable (failure to agree to a suitable extension of such bid and bid bond(s) by the party which initiated the protest shall be cause for summary dismissal of the protest by the municipality or the Commissioner); and
(iv) Promptly deliver (by certified mail, return receipt requested, or by personal delivery) its written determination of the protest to the complaining party and to each other participating party.

(C) The municipality's determination must be accompanied by a legal opinion addressing issues arising under State, or local law, if any and, when construction is involved, by an engineering report, if appropriate.

(D) The municipality should decide the protest as promptly as possible - generally within 3 weeks after receipt of a protest, unless extenuating circumstances require a longer period of time for proper resolution of the protest.

22a-482-4 (o)(5) Procedures

(A) Where resolution of an issue properly raised with respect to a procurement requirement necessitates prior or collateral resolution of a legal issue arising under State or local law, and such law is not clearly established in published legal decisions of the State or other relevant jurisdiction, the municipality may rely upon:

(i) An opinion of the municipality's legal counsel adequately addressing the issue;
(ii) The established or consistent practice of the municipality, to the extent appropriate;
(iii) The law of other local jurisdictions as established in published legal decisions; r
(iv) If none of the foregoing adequately resolve the issue, published decisions of the Comptroller General of the United States (U.S. General Accounting Office) or of the Federal or State courts addressing Federal or State requirements comparable to procurement requirements of this section.

(B) A party who submits a document subsequent to initiation of a protest proceeding must simultaneously furnish each of the other parties with a copy of such document.

(C) The procedures established herein are not intended to preclude informal resolution or voluntary withdrawal of protests. A complainant may withdraw its appeal at any time, and the protest proceedings shall thereupon be terminated.

(D) A protest may be dismissed for failure to comply with procedural requirements set forth in this section.

22a-482-4 (o)(6) Burden of proof

(A) In protest proceedings, if the municipality proposes to award a formally advertised, competitively bid, fixed price contract to a party who has submitted the apparent lowest price, the party initiating the protest will bear the burden of proof.

(B) In protest proceedings:

(i) If the municipality proposes to award a formally advertised, competitively bid, fixed price contract to a bidder other than the bidder which submitted the apparent lowest price, the municipality will bear the burden of proving that its determination concerning responsiveness is in accordance with these regulations; and

(ii) If the basis for the municipality's determination is a finding of nonresponsibility, the municipality must establish and substantiate the basis for its determination and must adequately establish that such determination has been made in good faith.

22a-482-4 (o)(7) Deferral of procurement action

Upon receipt of a protest, the municipality must defer the protested procurement action (for example, defer the issuance of solicitations, contract award, or issuance of notice to proceed under a contract) until ten days after delivery of its determination to the participating parties. The municipality may receive or open bids at its own risk, if it considers this to be in its best interest. When the Commissioner has received a written protest, he or she must notify the municipality promptly to defer its protested procurement action until notified of the formal or informal resolution of the protest.

22a-482-4 (o)(8) Enforcement

Noncompliance with the procurement provisions by the municipality shall be cause for enforcement action in accordance with one or more of the provisions of Section 22a-482-4(h)(23).

22a-482-4 (o)(9) Limitation

A protest may not be filed with respect to the following:

(A) Issues not arising under the procurement provisions;

(B) Issues relating to the selection of a consulting engineer, provided that a protest may be filed only with respect to the mandatory procedural requirements of Section 22a-482-4(i);

(C) Issues primarily determined by local law or ordinance and as to which the Commissioner, upon review, determines that there is no contravening state requirement and that the municipality's action has a rational basis;

(D) Provisions of State regulations applicable to direct State contracts unless such provisions are explicitly referred to or incorporated in these regulations;

(E) Basic project design determinations; or

(F) Award of subcontracts or issuance of purchase orders under formally advertised, competitively bid, lump sum construction contracts. However, protest may be made to alleged violations of the following:

(i) Specification requirements of Section 22a-482-4(h)(12); or

(ii) Provisions applicable to the procurement procedures, negotiation or award of subcontracts or issuance of purchase orders under Section 22a-482-4(l).

(ii) Provisions applicable to the procurement procedures, negotiation or award of subcontracts or issuance of purchase orders under Section 22a-482-4(l).

ADDITIONAL REQUIRED CONTRACT PROVISIONS

Construction Safety and Health Standards

It is a condition of this Contract, and shall be made a condition of each Subcontract entered into pursuant to this Contract, that the CONTRACTOR and any subcontractor shall not require any laborer or mechanic employed in performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety, as determined under construction safety and health standards (Title 29, Code of Federal Regulations, Part 1518 - published in the

Federal Register on April 17, 1971) promulgated by the United States Secretary of Labor, in accordance with section 107 of the Contract Work Hours and Safety Standards Act (83 Stat. 96).

Service of Process

The CONTRACTOR, if not a resident or a domestic entity of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoints the Secretary of State of the State of Connecticut, and his successors in office as agent for service of process for any action arising out of or as a result of this Contract; such appointment to be evidenced by the appropriate filing with the office of the Secretary of the State of Connecticut and to be in effect throughout the life of this Contract, and six (6) years thereafter.

Substitution of Securities for Retainage

The CONTRACTOR is advised of the provisions of section 3-112a of the General Statutes of the State of Connecticut, Revision of 1966, which is quoted as follows:

SECTION 3-112a. Substitution of securities for retainages on state contracts. (a) Under any contract made or awarded by the state, or by any public department of official thereof, the CONTRACTOR may, from time to time withdraw the whole or any portion of the amount retained for payments to the CONTRACTOR pursuant to the terms of the contract, upon depositing with the comptroller (1) United States treasury bonds, United States treasury notes, United States treasury certificates of indebtedness or United States treasury bills, or (2) bonds or notes of the state of Connecticut or (3) bonds of any political subdivision in the state of Connecticut. No amount shall be withdrawn in excess of the market value of the securities at the time of deposit or of the par value of such securities, whichever is lower. (b) The comptroller shall, on a regular basis, collect all interest or income on the obligations so deposited and shall pay the same, when and as collected, to the CONTRACTOR who deposited the obligations. If the deposit is in the form of coupon bonds, the comptroller shall deliver each coupon as it matures to the CONTRACTOR. (c) Any amount deducted by the state, or by any public department or official thereof, pursuant to the terms of the contract, from the retainages due the CONTRACTOR, shall be deducted, first from that portion of the retainage for which no security has been substituted, then from the proceeds of any deposited security. In the latter case, the CONTRACTOR shall be entitled to receive interest, coupons or income only from those securities which remain after such amount has been deducted.

Requirements for Timely Payments

The CONTRACTOR is advised of the provisions of section 49-41a of the General Statutes of the State of Connecticut, Revision of 1958, which is quoted as follows:

SECTION 49-41a Enforcement of payment by general CONTRACTOR to subcontractor and by subcontractor to his subcontractors. (a) When any public work is awarded by a contract for which a payment bond is required by section 49-41, the contract for the public work shall contain the following provisions: (1) A requirement that the general CONTRACTOR, within forty-five days after payment to the CONTRACTOR by the state or a municipality, pay any amounts due any subcontractor, whether for labor performed or for materials furnished, when the labor or materials have been included in a requisition submitted by a CONTRACTOR and paid by the state or a municipality; (2) a requirement that the general CONTRACTOR shall include in each of its subcontracts a provision requiring each subcontractor to pay any amounts due any of its subcontractors, whether for labor performed or materials furnished, within twenty days after such subcontractor receives a payment from the general CONTRACTOR which encompasses labor or materials furnished by such subcontractor.

(b) If payment is not made by the general CONTRACTOR or any of its subcontractors in accordance with such requirements, the subcontractor shall set forth his claim against the general CONTRACTOR and the subcontractor of

a subcontractor shall set forth its claim against the subcontractor through notice by registered or certified mail. Ten days after receipt of that notice, the general CONTRACTOR shall be liable to the subcontractor, and the subcontractor shall be liable to the subcontractor, for interest on the amount due and owing at the rate of one per cent per month. In addition, the general CONTRACTOR, upon written demand of its subcontractor, or the subcontractor, upon written demand of its subcontractor, shall be required to place funds in the amount of the claim, plus interest of one per cent, in an interest-bearing escrow account in a bank in this state, provided the general CONTRACTOR or subcontractor may refuse to place the funds in escrow on the grounds that the subcontractor has not substantially performed the work according to the terms of his or its employment. In the event that such general CONTRACTOR or subcontractor refuses to place such funds in escrow, and the party making a claim against it under this section is found to have substantially performed its work in accordance with the terms of its employment in any arbitration or litigation to determine the validity of such claim, then such general CONTRACTOR or subcontractor shall pay the attorney's fees of such party.

(c) No payment may be withheld from a subcontractor for work performed because of a dispute between the general CONTRACTOR and another CONTRACTOR or subcontractor.

(d) This section shall not be construed to prohibit progress payments prior to final payment of the contract and is applicable to all subcontractors for material or labor whether they have contracted directly with the general CONTRACTOR or with some other subcontractor on the work.

Language not current
Maximum Retainage Allowed

SECTION 49-41b. Release of payments on public works construction projects. When any public work is awarded by a contract for which a payment bond is required by section 49-41 and such contract contains a provision requiring the general or prime CONTRACTOR under such a contract to furnish a performance bond in the full amount of the contract price, the awarding authority shall be prohibited from withholding more than five per cent from any periodic or final payment which is otherwise properly due to the general or prime CONTRACTOR under the terms of such contract, and any such general or prime CONTRACTOR shall be prohibited from withholding more than five per cent from any periodic or final payment which is otherwise due any subcontractor.

Nondiscrimination

The CONTRACTOR agrees and warrants that in the performance of this Contract CONTRACTOR will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age marital status, national origin, sex, mental retardation, or physical disability, including, but not limited to, blindness, unless it is shown by such CONTRACTOR that such disability prevents performance of the Work involved in any manner prohibited by the laws of the United States or of the State of Connecticut, and further agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission concerning the employment practices and procedures of the CONTRACTOR as relates to the provisions of Public Act 78-148 and as required by law.

This Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill promulgated June 16, 1971 and, as such, this contract may be cancelled, terminated or suspended by the State Labor Commissioner for violation of or non-compliance with said Executive Order No. Three or any state or federal law concerning nondiscrimination , notwithstanding that the Labor Commissioner is not a party to this Contract. The parties to this Contract as part of the consideration hereof, agree that Executive Order No. Three is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the State Labor Commissioner shall

have continuing jurisdiction in respect to contract performance in regard to nondiscrimination, until the Contract is completed or terminated prior to completion.

The CONTRACTOR or subcontractor agrees, as part consideration hereof, that this Contract is subject to the Guidelines and Rules issued by the State Labor Commissioner to implement Executive Order No. Three, and that CONTRACTOR will not discriminate in CONTRACTOR's employment practices or policies, will file all reports as required, and will fully cooperate with the State of Connecticut and the State Labor Commissioner.

The Governor's Executive Order No. Three and the Guidelines and Rules implementing the Governor's Executive Order No. Three are included elsewhere in the Contract Documents.

Language Not Current
Construction, Alteration or Repair of Public Works Projects by the State or Political Subdivision

The CONTRACTOR shall comply with the provisions of Section 31-53 of the General Statutes of the State of Connecticut, Revision of 1967, a part of which is quoted as follows:

> SECTION 31-53(a). Each contract for the construction, alteration or repair of any public works projects by the State or any of its agents, or by any political subdivision of the State or any of its agents, shall contain the following provision: "The wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such employee welfare fund, as defined in subsection (h) of this section, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works contract work is being constructed. Any CONTRACTOR who is not obligated by agreement to make payment or contribution on behalf of such employees to any such employee welfare fund shall pay to each employee as part of his wages the amount of payment or contribution for his classification on each pay day."

Listing All Employment Openings With the Office of the Connecticut State Employment Service

This contract is executed subject to the Governor's Executive Order No. 17, a copy of which is attached hereto and is hereby made a part of this Agreement. Governor's Executive Order No. 17 requires, inter alia, that all CONTRACTORs and subcontractors shall list all employment openings with the office of the Connecticut State Employment Service in the area where the work is to be performed or where the services are to be rendered. Failure of the CONTRACTOR to conform with the requirements of the Governor's Executive Order No. 17 and any orders, rules or regulations issued pursuant thereto, shall be a basis for termination of this agreement by the State.

Residents Preference in Work on Other Public Facilities

The CONTRACTOR shall comply with the provisions of Section 31-52a of the General Statutes of the State of Connecticut, Revision of 1967, a part of which is quoted as follows:

> SECTION 31-52a(b). Each contract for any such project covered by this section under the supervision of the state or any of its agents shall contain the following provision: "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."

Education, Welfare, and Public Health Tax (Sales and Use Tax)

The CONTRACTOR's attention is called to Regulation 12-426-18 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, in the following prescribed form:

Project Sign (When DEEP/EPA funds are applicable)

The CONTRACTOR shall erect a sign at the Site identifying the Project and indicating that the Connecticut Department of Energy and Environmental Protection is providing funding for the construction of the Project. The sign shall be erected within 14 days after the Notice to Proceed has been issued, and shall be in accordance with these specifications and the enclosed project sign detail. The sign shall be furnished, erected, and maintained by the CONTRACTOR at a location designated by the Engineer. The names of the Commissioner of Energy and Environmental Protection and the Governor of the State of Connecticut as shown on the sign shall be kept current, and shall be revised within 30 days of such notice to the CONTRACTOR that a change has occurred, at no cost to the OWNER. No additional information shall be placed on the project sign beyond that shown in the project sign detail. If the OWNER desires to erect a supplemental sign with additional detail regarding the Project or its sponsors, that sign shall be placed in such a manner that the project sign is not obscured from public view.

The sign shall be constructed of 3/4" minimum thickness exterior plywood (A-B) or APA high density overlay plywood (HDO). All fasteners shall be of a rustproof nature. The sign face background shall consist of at least three (3) coats of white outdoor enamel paint. The sign shall be fastened securely in an upright position and maintained in a location on the Site clearly visible to the public and to visitors to the Site.

* *

CONTRACTOR'S
EXEMPT PURCHASE CERTIFICATE

Town ____Grant or Loan Identifier ___________

Contract Name ____Contract Number __________

I hereby certify under penalties of (FALSE STATEMENT) that I am engaged in the performance of a construction contract funded by the following named exempt agency or organization:

Department of Energy and Environmental Protection
79 Elm Street, Hartford, Connecticut

That such agency is, to the best of my knowledge and belief, exempt from the Education, Welfare and Public Health Tax (Sales and Use Tax) because it is a branch of the State Government, in accordance with Regulation 12-426-18 of the Sales and Use Tax Division of the State Department of Revenue Services.

That this certificate is issued to cover all purchases of material and supplies to be physically incorporated in and become a permanent part of the project referred to above.

___________________________ ____________
Signature of CONTRACTOR Date

Name of Firm: ____________________________

Business Address:____________________________

____

* *

The following subsections are set forth here as required by section 4a-60 of the Connecticut General Statutes and shall be set forth in all Subcontracts:

(a) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut. The contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved; (1) the contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the commission; (3) the contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the commission advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, 46a-68e and 46a-68f; (5) the contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56.

(b) If the contract is a public works contract, the contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works project.

The following subsections are set forth herein as required by section 4a-60a of the Connecticut General statutes and shall be set forth in all Subcontracts:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for

employment; (3) the contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and (4) the contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.

Executive Orders of the Governor

This Contract and all Subcontracts are subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated august 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of this Contract as if they had been fully set forth in it. This provision shall be set forth and incorporated in all Subcontracts.

EXECUTIVE ORDER NO. THREE

STATE OF CONNECTICUT
BY HIS EXCELLENCY
THOMAS J. MESKILL
GOVERNOR
EXECUTIVE ORDER NO. THREE

WHEREAS, sections 4-61d (b) and 4-11a of the 1969 supplement to the general statutes require nondiscrimination clauses in state contracts and subcontracts for construction on public buildings, other public works and goods and services and

WHEREAS, section 4-61e (c) of the 1969 supplement to the general statutes requires the labor department to encourage and enforce compliance with this policy by both employers and labor unions, and to promote equal employment opportunities, and

WHEREAS, the government of this state recognizes the duty and desirability of its leadership in providing equal employment opportunity, by implementing these laws.

NOW, THEREFORE, I, THOMAS J. MESKILL, Governor of the State of Connecticut, acting by virtue of the authority vested in me under section twelve of article fourth of the constitution of the state, as supplemented by section 3-1 of the general statutes, do hereby ORDER and DIRECT, as follows, by this Executive Order:

I

The labor commissioner shall be responsible for the administration of this Order and shall adopt such regulations as he deems necessary and appropriate to achieve the purposes of this Order. Upon the promulgation of this Order, the commissioner of finance and control shall issue a directive forthwith to all state agencies, that henceforth all state con-tracts and subcontracts for construction on public buildings, other public works and goods and services shall contain a pro-vision rendering such contract or subcontract subject to this Order, and that such contract or subcontract may be canceled, terminated or suspended by the labor commissioner for violation of or noncompliance with this Order or state and federal laws concerning nondiscrimination, notwithstanding that the labor commissioner is not a party to such contract or subcontract.

II

Each contractor having a contracting containing the provisions prescribed in section 4-11a of the 1969 supplement to the general statutes, shall file and shall cause each of his subcontractors to file, compliance reports with the contracting agency or the labor commissioner, as may be directed. Such reports shall be filed within such times and shall contain such information as to employment policies and statistics of the contractor and each subcontractor, and shall be in such form as the labor commissioner may prescribe. Bidders or prospective contractors or subcontractors may be required to state whether they have participated in any previous contract subject to the provisions of this Order of any preceding similar Order, and in that event to submit on behalf of themselves and their proposed subcontractors compliance reports prior to or as an initial part of their bid or negotiation of a contract.

III

Whenever the contractor or subcontractor has a collective bargaining agreement or contract or understanding with a labor organization or employment agency as defined in section 31-122 of the general statutes, the compliance report shall identify the said organization or agency and the contracting agency or the labor commissioner may require a compliance report to be filed with the contracting agency or the labor commissioner, as may be directed, by such organization or agency, signed by an authorized officer or agent of such organization or agency, with supporting information, to the effect that the signer's practices and policies including but not limited to matters concerning personnel, training, apprenticeship, member-ship, grievance and representation, and upgrading, do not discriminate on grounds of race, color, religious creed, age, sex or national origin, or ancestry of any individual, and that the signer will either affirmatively cooperate in the implementation of the policy and provisions of this Order, or that it consents and agrees that recruitment, employment and the terms and conditions of employment under the proposed contract shall be in accordance with the purposes and provisions of the Order.

IV

The labor commissioner may by regulation exempt certain classes of contracts, subcontracts or purchase order from the implementation of this Order, for standard commercial supplies or raw materials, for less than specified amounts of money or numbers of workers or for subcontractors below a specified tier. The labor commissioner may also provide by regulation for the exemption of facilities of a contractor which are in all respect a separate and distinct from activities of the contractor related to the performance of the state contract, provided only that such exemption will not interfere with or impede the implementation of this Order, and provided further, that in the absence of such an exemption, all facilities shall be covered by the provisions of this Order.

V

Each contracting agency shall be primarily responsible for obtaining compliance with the regulations of the labor commissioner with respect to contracts entered into by such agency or its contractors. All contracting agencies shall comply with the regulations of the labor commissioner in discharging their primary responsibility for securing compliance with the provisions of contracts and otherwise with the terms of this Order and of the regulations of the labor commissioner issued pursuant to this Order. They are directed to cooperate with the labor commissioner and to furnish the labor commissioner such information and assistance as he may require in the performance of his functions under this Order. They are further directed to appoint or designate from among the personnel of each agency, compliance officers, whose duty shall be to seek compliance with the objectives of this Order by conference, conciliation, mediation, or persuasion.

VI

The labor commissioner may investigate the employment practices and procedures of any state contractor or sub-contractor and the practices and policies of any labor organization or employment agency hereinabove described, relating to employment under the state contract, as concerns nondiscrimination by such organization or agency as hereinabove described, or the labor commissioner may initiate such investigation by the appropriate contract agency, to determine whether or not the contractual provisions, hereinabove specified or statutes of the state respecting they have been violated. Such investigation shall be conducted in accordance with the procedures established by the labor commissioner and the investigating agency shall report to the labor commissioner any action taken or recommended.

VII

The labor commissioner shall receive and investigate or cause to be investigated complaints by employees or prospective employees of a state contractor or subcontractor or member or applicants for membership or apprenticeship or training in a labor organization or employment agency hereinabove described, which allege discrimination contrary to the contractual provisions specified hereinabove or state statutes requiring nondiscrimination in employment opportunity. If this investigation is conducted for the labor commissioner by a contracting agency, that agency shall report to the labor commissioner what action has been taken or is recommended with regard to such complaints.

VIII

The labor commissioner shall use his best efforts directly and through contracting agencies, or other interested federal, state and local agencies, contractors and all other available instrumentalities, including the commission on human rights and opportunities, the executive committee on human rights and opportunities, and the apprenticeship council under its mandate to provide advice and counsel to the labor commissioner in providing equal employment opportunities to all apprentices and provide training, employment and upgrading opportunities for disadvantaged workers, in accordance with section 31-51 (d) of the 1969 supplement to the general statutes, to cause any labor organization or any employment agency whose members are engaged in work under government contracts or referring workers or providing or supervising apprentice-ship or training for or in the course of work under a state contract or subcontract to cooperate in the implementation of the purposes of this Order. The labor commissioner shall in appropriate cases notify the commission on human rights and opportunities or other appropriate state or federal agencies whenever it has reason to believe that the practices of any such organization or agency violate equal employment opportunity requirements or state or federal law.

IX

The labor commissioner or any agency officer or employee in the executive branch designated by regulation of the labor commissioner may hold such hearings, public or private, as the labor commissioner may deem advisable for compliance, enforcement or educational purposes under this Order.

X

(a) The labor commissioner may hold or cause to be held hearings, prior to imposing ordering or recommending the imposition or penalties and sanctions under this Order. No order for disbarment or any contractor from further state contracts shall be made without affording the contractor an opportunity for a hearing. In accordance with such regulations as the labor commissioner may adopt, the commissioner or the appropriate contracting agency may

(1) Publish or cause to be published the names of contractors or labor organizations or employment agencies as hereinabove described which it has concluded have complied or failed to comply with the provisions of this Order or the regulations of the labor commissioner in implementing this Order.

(2) Recommend to the commission on human rights and opportunities that in cases in which there is substantial or material violation or threat thereof of the contractual provision or related state statutes concerned herein, appropriate proceedings be brought to enforce them, including proceedings by the commission on its own motion under chapter 563 of the general statutes and the enjoining, within the limitations or applicable law, of organizations, individuals or groups who prevent directly or indirectly or seek to prevent directly or indirectly compliance with the provisions of this Order.

(3) Recommend that criminal proceedings be brought under chapter 939 of the general statutes.

(4) Cancel, terminate, suspend or cause to be canceled, terminated, or suspended in accordance with law any contract or any portion or portions thereof for failure of the contractor or subcontractor to comply with the nondiscrimination provisions of the contract. Contracts may be canceled, terminated, suspended absolutely or their continuance conditioned upon a pro-gram for future compliance approved by the contracting agency.

(5) Provide that any contracting agency shall refrain from entering into any further contract or extensions or modifications of existing contracts with any contractor until he has satisfied the labor commissioner that he has established and will carry out personnel and employment policies compliant with this Order.

(6) Under regulations prescribed by the labor commissioner each contracting agency shall make reasonable efforts within a reasonable period of time to secure compliance with the contract provisions of this Order by methods of convenience, conciliation, mediation or persuasion, before other proceedings shall be instituted under this Order or before a state contract shall be can-celled or terminated in whole or in part for failure of the contractor or subcontractor to com-ply with the contract provisions of state statute and this Order.

(b) Any contracting agency taking any action authorized by this Order, whether on its own motion or as directed by the labor commissioner or pursuant to his regulations shall promptly notify him of such action. Whenever the labor commissioner makes a determination under this order, he shall promptly notify the appropriate contracting agency and other interested federal, state and local agencies of the action recommended. The state and local agency or agencies shall take such action and shall report the results thereof to the labor commissioner within such time as he shall specify.

XI

If the labor commissioner shall so direct, contracting agencies shall not enter into contracts with any bidder or prospective contractor unless he has satisfactorily complied with the provisions of this Order, or submits a program for compliance acceptable to the labor commissioner, or if the labor commissioner so authorizes, to the contracting agency.

XII

Whenever a contracting agency cancels or terminates a contract, or a contractor has been disbarred from further government contracts because of noncompliance with the contract provisions with regard to nondiscrimination, the labor com-missioner or the contracting agency shall rescind such disbarment, upon the satisfaction of the labor commissioner that the contractor has purged himself of such noncompliance and will thenceforth carry out personnel and employment policies of non-discrimination in compliance with the provision of this Order.

XIII

The labor commissioner may delegate to any officer, agency or employee in the executive branch any function or duty of the labor commissioner under this Order except authority to promulgate regulations of a general nature.

XIV

This Executive Order supplements the Executive Order issued on September 28, 1967. All regulations, orders, instructions, designations and other directives issued heretofore in these premises, including these issued by the heads of various departments or agencies under or pursuant to prior order or statute, shall remain in full force and effect, unless and until revoked or superseded by appropriate authority, to the extent that they are not inconsistent with this Order.

This Order shall become effective thirty days after the date of this Order.

Dated at Hartford, Connecticut, this 16th day of June, 1971.

_____

GOVERNOR

GUIDELINES AND RULES
OF STATE LABOR COMMISSIONER
IMPLEMENTING GOVERNOR'S EXECUTIVE
ORDER NO. THREE

SEC. 1 PERSONS AND FIRMS SUBJECT TO EXECUTIVE ORDER NO. THREE AND GUIDELINES AND RULES.

a. Every contractor, or subcontractor as defined in Sec. 2 hereof, supplier of goods or services, vendor, bidder and prospective contractor or subcontractor, having ten or more employees as defined in Sec. 3 of these guidelines, having or entering into or bidding to enter into any type of contractual relationship with the State of Connecticut or any of its agencies, boards, commissions, departments or officers, and if the consideration, cost, subject matter or value of the goods or services exceeds $5,000.00, shall be subject to the Governor's Executive Order No. Three and these Guidelines and Rules.

b. A copy of the Governor's Executive Order No. Three and of these Guidelines and Rules shall be available to each said contractor, subcontractor, supplier, vendor, bidder and prospective contractor and subcontractor, and the said Executive Order No. Three and these Guidelines and Rules shall be incorporate by reference and made a part of the contract, purchase order, agreement or document concerned. A copy of the Executive Order and of these Guidelines and Rules shall be furnished to a contracting party or bidder on request.

c. All persons, partnerships, associations, firms, corporations and other entities having less than ten employees as defined in Sec. 3 at the time of the bid and execution of the contract and continuing through the performance of the contract are exempt from the provisions of the said Executive Order and these Guidelines and Rules. All contracts, subcontracts, purchase orders and agreements wherein the consideration ins $5,000.00 or less shall be exempt from Executive Order No. Three and from these Guidelines and Rules.

SEC. 2 SUBCONTRACTORS

As used herein, subcontractors are persons, partnerships, associations, firms or corporations or other entities having contractual relationship with a contractor who in turn has a contract with the State of Connecticut or any of its agencies, board, commissions or departments. Subcontractors below this tier are exempt from the Executive Order and from these Guidelines and Rules.

SEC. 3 EMPLOYEES

As used herein, employees are persons working full or part-time irrespective of personnel classification whose wages, salaries, or earnings are subject to the Federal Insurance Contribution Act and/or to Federal Withholding Tax as a matter of law (whether in fact or not any actual withholding occurs in a given case), in an employee-employer relationship at the time of bid, contract execution, or offer or acceptance, and/or during any time thereafter during the existence of the performance period of the contract to the conclusion thereof.

SEC. 4 REPORTS

a. Prior to the execution of the contract or prior to acceptance of a bid, as the case may be, the contractor, subcontractor, bidder or vendor shall file a report with the State Labor Commissioner, which report shall be complete and contain all of the information therein prescribed. The report shall be on Form E.0.3-1, a facsimile of which is attached hereto and made a part hereof, or in lieu thereof the contractor, subcontractor, bidder or vendor shall submit a detailed report containing all of the information required in Form E.O. 3-1.

b. The Labor Commissioner may require the filing of additional reports prior to final payment or prior to any renewal or extension of the contract and during the duration of the contract at such times as the Commissioner may, in his discretion, from time to time deem necessary. The Labor Commissioner may require the filing of additional information or reports, and the contractor, subcontractor, bidder or vendor shall furnish said information or report within the times prescribed by the Labor Commissioner.

c. The Labor Commissioner may, at his discretion, also require timely statistical reports on the number of minority employees employed or to be employed in the performance of the contract, and the Labor Commissioner may de-fine such minority groups or persons.

d. Reports filed pursuant to these Guidelines and Rules in Implementation of Executive Order No. Three are not public records subject to public inspection, but may be inspected only by federal and state officials having jurisdiction and authority to investigate matters of this type. All federal and state agencies empowered by law to investigate matters relating to Executive order No. Three shall have access to these reports for inspection or copying during regular business hours.

e. Any person who willfully, wantonly or through negligence destroys or permits to be destroyed, alters or allows to be altered after filing any reports submitted in compliance herewith shall be subject to penalties as pre-scribed by law.

SEC. 5. MANDATORY CLAUSES IN DOCUMENTS

a. All contracts shall contain the following provisions verbatim:

This contract is subject in the provisions of Executive Order No. Three of Governor Thomas J. Meskill promulgated June 16, 1971 and, as such, this contract may be canceled, terminated or suspended by the state labor commissioner for violation of or noncompliance with said Executive Order No. Three, or any state or federal law concerning nondiscrimination, notwithstanding that the labor commissioner is not a party to this contract. The parties to this contract, as part of the consideration hereof, agree that said Executive Order No. Three is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the state labor commissioner shall have continuing jurisdiction in respect to contract performance in regard to nondiscrimination, until the contract is completed or terminated prior to completion.

The (contractor), (subcontractor), (bidder), (vendor) agrees, as part consideration hereof, that his (order) (contract) is subject to the Guidelines and Rules issued by the state labor commissioner to implement Executive Order No. Three, and that he will not discriminate in his employment practices or policies, will file all reports as required, and will fully cooperate with the State of Connecticut and the state labor commissioner.

These provisions are in addition to and not in lieu of other clauses required by law.*

*N.B. The above paragraphs contain requirements additional to those set forth in July 16, 1971 directive to state agencies.

b. Every purchase order or like form submitted by a vendor or bidder, as applicable, shall contain the following clause verbatim:

Vendor agrees, as part of the consideration hereof, that this order is subject to the provisions of Executive Order No. Three and the Guidelines and Rules issued by the Labor Commissioner implementing said Order as to

nondiscrimination, and vendor agrees to comply therewith.

c. Where preprinted contract forms have been prescribed by federal authority and the rules of the federal agency prohibit the alteration thereof, the compliance officer of the State agency concerned shall submit to the Labor Commissioner a suggested short form or addendum acceptable to the federal agency, and such cases, after approval by the Labor Commissioner, said clause may be substituted.

SEC. 6. COOPERATION OF STATE AGENCIES, BOARDS AND COMMISSIONS

Every agency, board, commission and departments of the State of Connecticut shall cooperate with the Labor Commissioner in the implantation of Executive Order No. Three and shall furnish such information and assistance as the Labor Commissioner may from time to time request.

SEC. 7. INVESTIGATIONS, COMPLAINTS

The Labor Commissioner may initiate an investigation upon receipt of a complaint alleging discrimination. The Labor Commissioner may request that an investigation be conducted by the State agency which is the party to the contract in question. Investigations shall be conducted in accordance with acceptable legal standards, safeguarding the rights of all parties involved, and obtaining all of the relevant facts necessary for a complete determination of the issues. If the Labor Commissioner is not satisfied with the investigation or any part thereof he may order it to continue or to proceed further.

SEC. 8. HEARINGS

The Labor Commissioner or officers designed by the heads of the State agencies, boards and commissions may conduct hearings on complaints filed. Hearings shall be held only after a report of the complaint has been filed with the Labor Commissioner and after a hearing on the complaint has been authorized or directed by the Labor Commission-er. Hearings shall be in accordance with the accepted principles of administrative law. All parties shall be afforded the opportunity to a full, fair, impartial and complete hearing, the opportunity to examine and cross examine witnesses and to be present at all sessions of the hearing. If any party is vulnerable to a charge of a violation of the law, he shall be afforded the opportunity to procure counsel who say be present at the hearing.

SEC. 9. EQUAL EMPLOYMENT OPPORTUNITIES

All State contracting agencies, employers, and labor unions shall use their best efforts to provide equal employment opportunities to all apprentices and to provide training, employment and upgrading opportunities for disadvantaged workers in accordance with section 31-51 (d) of the General Statutes.

SEC. 10. DUTIES OF CONTRACTING AGENCIES.

All State contracting agencies shall be responsible for compliance with said Executive Order and with all state and federal laws relating to equal employment opportunities. All contracting agencies conducting investigations for the Labor Commissioner pursuant to Executive Order No. Three and these Guidelines and Rules shall report to the Labor Commissioner the action taken or recommended with regard to each complaint filed. Each officer of the executive department, every commissioner, and each executive head of each State agency, board and commission in the executive branch of the State government is expected to assume the responsibility of seeing to complete compliance with the Governor's Executive Order No. Three and shall forthwith take steps to assure and guarantee that there shall be no discrimination within their departments, agencies, boards or commissions in the performance of any state contract or subcontract on the basis of race, creed, color, sex, age, national origin or national ancestry, or in any way in violation of any state or federal law relating thereto.

BY VIRTUE OF THE AUTHORITY VESTED IN ME PURSUANT TO EXECUTIVE ORDER NO. THREE EFFECTIVE JULY 16, 1971, AND THE GENERAL STATUTES OF CONNECTICUT.

Date in Wethersfield, Connecticut this 19th day of Nov. , 1971,

Jack Fusari
Labor Commissioner

EXECUTIVE ORDER NO. SEVENTEEN

2013-04 00820.01-C 3/11/2013

STATE OF CONNECTICUT
THOMAS J. MESKILL
GOVERNOR
EXECUTIVE ORDER NO. SEVENTEEN

WHEREAS, Section 31-247 of the General statutes of Connecticut as amended requires the maintaining of the established free services of the Connecticut State Employment Service to both employers and prospective employees and

WHEREAS, Section 31-5 of the General Statutes of Connecticut requires that no compensation or fee shall be charged or received directly or indirectly for the services of the Connecticut State Employment Service and

WHEREAS, large numbers of our citizens who have served in the Armed Forces of our nation are returned to civilian life in our state and seeking employment in civilian occupations and

WHEREAS, we owe a duty as well as gratitude to these returning veterans including the duty to find suitable employment for them and

WHEREAS, many of our handicapped citizens are fully capable of employment and are entitled to be placed in suitable employment and

WHEREAS, many of the citizens of our state who are unemployed are unaware of the job openings and employment opportunities which do in fact exist in our state and

WHEREAS, notwithstanding the free services of the Connecticut State Employment Service, many of our Connecticut employers do not use its free services or do not avail themselves fully of all the services offered.

NOW, THEREFORE, I, Thomas J. Meskill, Governor of the State of Connecticut, acting by virtue of the authority vested in me under the fourth article of the Constitution of the State and in accordance with Section 3-1 of the General Statutes, do hereby ORDER and DIRECT, as follows, by this Executive Order:

I

The Labor Commissioner shall be responsible for the administration of this Order and shall do all acts necessary and appropriate to achieve its purpose. Upon the promulgation of this Order, the Commissioner of Finance and Control shall issue a directive forthwith to all state agencies that henceforth all state contracts and subcontracts for construction on public buildings, other public works and goods and services shall contain a provision rendering such contract or subcontract subject to this Order, and that such contract or subcontract may be canceled, terminated or suspended by the Labor Commissioner for violation of or noncompliance with this Order, notwithstanding that the Labor Commissioner is not a party to such contract or subcontract.

II

Every contractor and subcontractor having a contract with the state or any of its agencies, boards, commissions, or departments, every individual partnership, corporation, or business entity having business with the state or who or which seeks to do business in the state, and every bidder or prospective bidder who submits a bid or replies to an invitation
to bid on any state contract shall list all employees openings with the office of the Connecticut State Employment Service in the area where the work is in be performed or where the services are to be rendered.

III

All state contracts shall contain a clause which shall be a condition of the contract that the contractor and any subcontractor holding a contract directly under the contractor shall list all employment openings with the Connecticut State Employment Service. The Labor Commissioner may allow exceptions to listings of employment openings which the contractor proposes to fill from within its organization from employees on the rolls of contractor on the date of publication of the invitation to bid or the date on which the public announcement was published or promulgated advising of the program concerned.

IV

Each contracting agency of the state shall be primarily responsible for obtaining compliance with this Executive Order. Each contracting agency shall appoint or designate from amount its personnel one or more persons who shall be responsible for compliance with the objectives of this Order

V

The Labor Commissioner shall be an is hereby empowered to inspect the books, records, payroll and personnel data of each individual or business entity subject to this Executive Order and may hold hearings or conference, formal or informal, in pursuance of the duties and responsibilities hereunto delegated to the Labor Commissioner.

VI

The Labor Commissioner or any agency officer or employee in the executive branch designated by regulation of the Labor Commissioner may hold such hearings, public or private, as the Labor Commissioner may deem advisable for compliance, enforcement or educational purposes under this Order.

VII

(a) The Labor Commissioner may hold or cause to be held hearings, prior to imposing, ordering, or recommending the imposition of penalties and sanctions under this Order. In accordance herewith, the Commissioner or the appropriate contracting agency may suspend, cancel, terminate, or cause to be suspended, canceled, or terminated in accordance with
law any contract or any portion or portions thereof for failure of the contractor or subcontractor to comply with the listing provisions of the contract. Contracts may be canceled, terminated, suspended absolutely or their continuance conditioned upon a program for future compliance approved by the contracting agency.

(b) Any contracting agency taking any action authorized by this Order, whether on its own motion or as directed by the Labor Commissioner, shall promptly notify him of such action. Whenever the Labor Commissioner makes a determination under this Order, he shall promptly notify the appropriate contracting agency of the action recommended. The agency shall report the results to the Labor Commissioner promptly.

VIII

If the Labor Commissioner shall so direct, contracting agencies shall not enter into contracts with any bidder or prospective contractor unless he has satisfactorily complied with the provisions of this Order.

This Order shall become effective sixty days after the date of this Order.

Dated at Hartford, Connecticut, this 15th day of February, 1973.

_____
Governor

EXECUTIVE ORDER NO. SIXTEEN

STATE OF CONNECTICUT
BY HIS EXCELLENCY
JOHN G. ROWLAND
GOVERNOR
EXECUTIVE ORDER NO. SIXTEEN

WHEREAS, the State of Connecticut recognizes that workplace violence is a growing problem that must be addressed; and

WHEREAS, the State is committed to providing its employees a reasonably safe and healthy working environment, free from intimidation, harassment, threats, and/or violent acts; and

WHEREAS, violence or the threat of violence by or against any employee of the State of Connecticut or member of the public in the workplace is unacceptable and will subject the perpetrator to serious disciplinary action up to and including discharge and criminal penalties.

NOW, THEREFORE, I, John G. Rowland, Governor of the State of Connecticut, acting by virtue of the authority vested in me by the Constitution and by the statutes of this state, do hereby ORDER and DIRECT:

That all state agency personnel, contractors, subcontractors, and vendors comply with the following Violence in the Workplace Prevention Policy:

The State of Connecticut adopts a statewide zero tolerance policy for workplace violence.

Therefore, except as may be required as a condition of employment ¾
No employee shall bring into any state worksite any weapon or dangerous instrument as defined herein.
No employee shall use, attempt to use, or threaten to use any such weapon or dangerous instrument in a state worksite.
No employee shall cause or threaten to cause death or physical injury to any individual in a state worksite.

Weapon means any firearm, including a BB gun, whether loaded or unloaded, any knife (excluding a small pen or pocket knife), including a switchblade or other knife having an automatic spring release device, a stiletto, and police baton or nightstick or any martial arts weapon or electronic defense weapon.

Dangerous instrument means any instrument, article, or substance that, under the circumstances, is capable of causing death or serious physical injury.

Violation of the above reasonable work rules shall subject the employee to disciplinary action up to and including discharge.

That each agency must prominently post this policy and that all managers and supervisors must clearly communicate this policy to all state employees.

That all manager and supervisors are expected to enforce this policy fairly and uniformly.

That any employee who feels subjected to or witnesses violent, threatening, harassing, or intimidating behavior in the workplace immediately report the incident or statement to their supervisor, manager, or human resources office.

That any employee who believes that there is a serious threat to their safety or the safety of others that requires immediate attention notifies proper law enforcement authorities and his or her manager or supervisor.

That any manager or supervisor receiving such a report shall immediately contact their human resources office to evaluate, investigate and take appropriate action.

That all parties must cooperate fully when questioned regarding violations of this policy.

That all parties be advised that any weapon or dangerous instrument at the worksite will be confiscated and that there is no reasonable expectation of privacy with respect to such items in the workplace.

That this order applies to all state employees in the executive branch.

That each agency will monitor the effective implementation of this policy.

That this order shall take effect immediately.

Dated in Hartford, Connecticut, this fourth day of August, 1999.

/s/John G. Rowland, Governor

WAGE RATE REQUIREMENTS

00820.02 WAGE RATE REQUIREMENTS. Wage rates on this Project shall conform to the following:

A. CONNECTICUT REQUIREMENTS. The State of Connecticut requires minimum wage rates to be paid if the value of work done on this Contract exceeds $400,000 for new construction or exceeds $100,000 for remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project. These wage rates, if required for this Project, are included in Document 00830.

It is the responsibility of the contractor before bid opening to request, if necessary, any additional information on State Wage Rates for those tradespeople who are not covered by the applicable State Wage Determination but who may be employed for the proposed work under this contract.

B. CERTIFIED PAYROLL/COMPLIANCE STATEMENT. The Contractor may be required, for work under this Contract, to submit weekly to the Engineer a certified payroll and compliance statement consistent with the requirements of public act 93-392. (Section 31-53 of Connecticut General Statues, as amended.) A copy of this form, if submittal is required, is included following this page.

C. FEDERAL REQUIREMENTS. It is the responsibility of the Contractor to obtain the most recent Federal Wage Determination. For further information on Federal Wage Determinations, the Contractor shall contact the U.S. Department of Labor in Washington D.C. Information may also be obtained from the Connecticut State Library, U.S. Regional Depository.

It is also the responsibility of the Contractor to request, before bid opening if necessary, any additional information on Federal Wage Determination for those tradespeople who are not covered by the applicable Federal Wage Determination but who may be employed for the proposed Work under this Contract.

D. RATES TO BE PAID. The minimum wage rates to be paid on this Project shall be as shown on either the State of Connecticut Labor Department Wage Rate Schedule or the Federal Wage Determination, whichever is higher. The State of Connecticut Department of Energy and Environmental Protection has determined that all construction on this Project shall be covered by the heavy construction rates and classifications.

DOCUMENT 00828.01 UTILITY TELEPHONE NUMBERS

Section 01060 of the Contract Documents is amplified for this Contract by the following:

The utility mains, ducts, poles and services in the construction area where shown on the Contract plans are at the approximate locations furnished by various utilities concerned. These locations are subject to possible errors in the source of the information and also errors in transcription.

The Contractor shall be responsible to make certain of the exact location of the mains, ducts, poles and services prior to excavation.

State law makes it mandatory to notify utilities before digging with power equipment. The Contractor shall call 1-800-922-4455 (toll free), 7:00 a.m. to 6:00 p.m., Monday through Friday, at least 48 hours prior to beginning the excavation. This "one-call" service is provided by the utility companies.

Once the call is made it is the utility company's responsibility to analyze the Site and identify and mark its underground facilities.

The following more commonly used utility numbers are listed for the Contractor's convenience in case additional specific information is needed.

The Metropolitan District (Water and Sewer)
555 Main Street, Post Office Box 800, Hartford, Connecticut 06142-0800
Telephone (860) 278-7850 (Press 1)

Connecticut Light & Power Company/Northeast Utilities
P.O. Box 270, Hartford, CT 06141-0270
Steve Klubnik (860) 665-2473 or William Bongiorno (860) 280-2523

AT&T
40 Brainard Road, Hartford, CT 06114
Peter Moffett (860) 725-1842 or Fred Bucchieri (860) 725-4428

AT&T
1441 North Colony Road, Meriden, CT
Giuseppe Aglieco (203) 238-5144

Yankee Gas Service Company
107 Seldon Street, Mail Stop NUS2, Berlin, CT 06037
Mr. Steven P. Testa (860) 665-6214

Comcast of CT, LLC dba: Comcast/Hartford
80 Great Hill Road, Seymour, CT 06483
Dean Muratori (860) 613-3070 Ext. 73802

DOCUMENT 00830 WAGE DETERMINATION SCHEDULE

00830.01 CONNECTICUT WAGE RATES. Connecticut minimum wage rates, if required for this Contract, are included following this page.

Minimum Rates and Classifications
for Heavy/Highway Construction

Connecticut Department of Labor
Wage and Workplace Standards Division

ID#: **H** 17491

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: 2013-04 | Project Town Windsor
FAP Number: | State Number:
Project: Maple Avenue Sewer Replacement And Rehabilitation

CLASSIFICATION	Hourly Rate	Benefits
01) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters. **See Laborers Group 5 and 7**		
1) Boilermaker	33.79	34% + 8.96
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	32.50	24.55
2) Carpenters, Piledrivermen	29.65	21.00

As of: Thursday, February 28, 2013

Project: Maple Avenue Sewer Replacement And Rehabilitation

2a) Diver Tenders	29.65	21.00
3) Divers	38.11	21.00
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	42.75	16.90
4a) Painters: Brush and Roller	30.22	16.90
4b) Painters: Spray Only	33.22	16.90
4c) Painters: Steel Only	30.47	15.40
4d) Painters: Blast and Spray	33.22	16.90

As of: Thursday, February 28, 2013

4e) Painters: Tanks, Tower and Swing	32.22	16.90
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	37.10	22.12
6) Ironworkers: (Ornamental, Reinforcing, Structural, and Precast Concrete Erection)	33.50	27.98 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	38.67	25.56

----LABORERS---- - Last updated 4/11/12

8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	25.80	16.45
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen, air tool operator	26.05	16.45

10) Group 3: Pipelayers	26.30	16.45
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block pavers and curb setters	26.30	16.45
12) Group 5: Toxic waste removal (non-mechanical systems)	27.80	16.45
13) Group 6: Blasters	27.55	16.45
Group 7: Asbestos Removal, non-mechanical systems (does not include leaded joint pipe)	26.80	16.45
Group 8: Traffic control signalmen	16.00	16.45

----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.---- Last updated 4/11/12----

13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	31.28	16.45 + a
13b) Brakemen, Trackmen	30.37	16.45 + a

----CLEANING, CONCRETE AND CAULKING TUNNEL----Last updated 4/11/12----

14) Concrete Workers, Form Movers, and Strippers	30.37	16.45 + a
15) Form Erectors	30.68	16.45 + a

----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----Last updated 4/11/12----

16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	30.37	16.45 + a

17) Laborers Topside, Cage Tenders, Bellman	30.26	16.45 + a
18) Miners	31.28	16.45 + a

----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----Last updated 4/11/12----

18a) Blaster	37.41	16.45 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	37.22	16.45 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	35.35	16.45 + a
21) Mucking Machine Operator	37.97	16.45 + a

Project: Maple Avenue Sewer Replacement And Rehabilitation

----TRUCK DRIVERS----(*see note below)

Two axle trucks	27.88	17.22 + a
Three axle trucks; two axle ready mix	27.98	17.22 + a
Three axle ready mix	28.03	17.22 + a
Four axle trucks, heavy duty trailer (up to 40 tons)	28.08	17.22 + a
Four axle ready-mix	28.13	17.22 + a
Heavy duty trailer (40 tons and over)	28.33	17.22 + a

As of: Thursday, February 28, 2013

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	28.13	17.22 + a

----POWER EQUIPMENT OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over. (Trade License Required)	35.50	20.50 + a
Group 2: Cranes (100 ton rate capacity and over); Backhoe/Excavator over 2 cubic yards; Piledriver ($3.00 premium when operator controls hammer). (Trade License Required)	35.18	20.50 + a
Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	34.44	20.50 + a
Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	34.05	20.50 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell)	33.46	20.50 + a

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	33.46	20.50 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	33.15	20.50 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and Under Mandrel).	32.81	20.50 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	32.41	20.50 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	31.98	20.50 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	29.94	20.50 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	29.94	20.50 + a

Group 12: Wellpoint Operator.	29.88	20.50 + a
Group 13: Compressor Battery Operator.	29.30	20.50 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	28.16	20.50 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	27.75	20.50 + a
Group 16: Maintenance Engineer/Oiler	27.10	20.50 + a
Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	31.41	20.50 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	28.99	20.50 + a

Project: Maple Avenue Sewer Replacement And Rehabilitation

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----Last updated 9/3/2010----

20) Lineman, Cable Splicer, Dynamite Man	44.36	3% + 13.70
21) Heavy Equipment Operator	39.92	3% + 13.70
22) Equipment Operator, Tractor Trailer Driver, Material Men	37.71	3% + 13.70
23) Driver Groundmen	33.27	3% + 13.70

----LINE CONSTRUCTION----Last updated 4/17/09----

24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20
26) Heavy Equipment Operators	37.10	6.5% + 10.70
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

Project: Maple Avenue Sewer Replacement And Rehabilitation

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.*

***Note: Hazardous waste premium $3.00 per hour over classified rate*

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

As of: Thursday, February 28, 2013

Project: Maple Avenue Sewer Replacement And Rehabilitation

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (g) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2009, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine

Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

Statute 31-55a

Last Updated: July 13, 2009

- Special Notice -

To All State and Political Subdivisions,Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the ***contractor's*** responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.
- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109 at (860) 263-6790.

◄-- Workplace Laws

Published by the Connecticut Department of Labor, Project Management Office

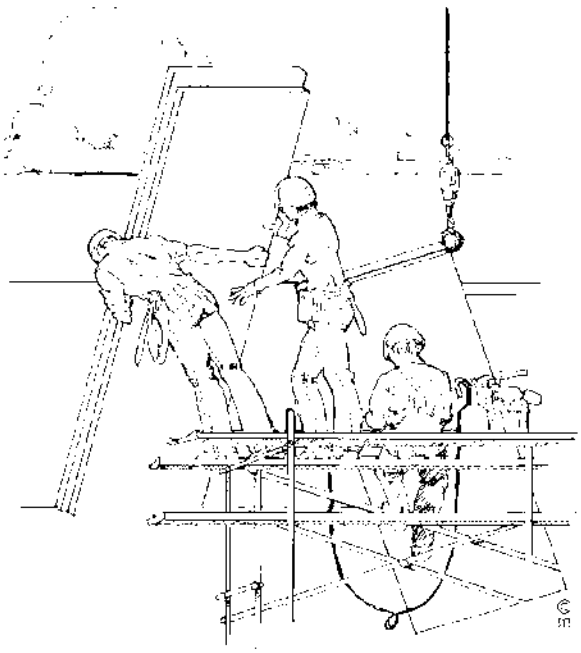
~NOTICE~

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached "Contracting Agency Certification Form" to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

✎ Inquiries can be directed to (860)263-6543.



CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION
CONTRACT COMPLIANCE UNIT

CONTRACTING AGENCY CERTIFICATION FORM

I, _____, acting in my official capacity as _____,
authorized representative title

for _____, located at _____,
contracting agency address

do hereby certify that the total dollar amount of work to be done in connection with

_____, located at _____,
project name and number address

shall be $_____, which includes all work, regardless of whether such project

consists of one or more contracts.

CONTRACTOR INFORMATION

Name:_____

Address:_____
Authorized Representative:_____
Approximate Starting Date: _____

Approximate Completion Date:_____

_____ _____
Signature Date

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

Date Issued: _____

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

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

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

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

_____
Signed

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

_____
Notary Public

Return to:

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

Rate Schedule Issued (Date): _____

Certified Payroll Form WWS - CPI

Last Updated: October 08, 2009

In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.

Note: Once you have downloaded these forms and are ready to print them out, set the print function on your PC to the horizontal print orientation.

Note2: Please download both the Payroll Certification for Public Works Projects **and** the Certified Statement of Compliance for a complete package. The Certified Statement of Compliance appears on the same page as the Fringe Benefits Explanation page.

Announcement: The Certified Payroll Form WWS-CPI can now be completed on-line!

- Certified Payroll Form WWS-CPI (PDF, 727KB)
- Sample Completed Form (PDF, 101KB)

Published by the Connecticut Department of Labor, Project Management Office

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53
Certified Payrolls with a statement of compliance
shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:

SUBCONTRACTOR NAME & ADDRESS

WORKER'S COMPENSATION INSURANCE CARRIER

POLICY #

EFFECTIVE DATE:
EXPIRATION DATE:

PAYROLL NUMBER | Week-Ending Date | PROJECT NAME & ADDRESS

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION / Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours / Total O/T Hours	BASE HOURLY RATE / TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							

7/13/2009 *IF REQUIRED
WWS-CP1

*SEE REVERSE SIDE

PAGE NUMBER _____OF

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

1) Medical or hospital care _____ 4) Disability_____

2) Pension or retirement _____ 5) Vacation, holiday_____

3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____of _____, (hereafter known as

Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

a) The records submitted are true and accurate;

b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;

c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);

d) Each such employee of the Employer is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;

e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and

f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such employee's name first appears.

_____ _____ _____

(Signature) (Title) Submitted on (Date)

Section B: Applies to CONNDOT Projects ONLY

That pursuant to CONNDOT contract requirements for reporting purposes only, all employees listed under Section B who performed work on this project are not covered under the prevailing wage requirements defined in Connecticut General Statutes Section 31-53.

_____ _____ _____

(Signature) (Title) Submitted on (Date)

Note: CTDOL will assume all hours worked were performed under Section A unless clearly delineated as Section B WWS-CP1 as such. Should an employee perform work under both Section A and Section B, the hours worked and wages paid must be segregated for reporting purposes.

*****THIS IS A PUBLIC DOCUMENT*****

*****DO NOT INCLUDE SOCIAL SECURITY NUMBERS*****

Weekly Payroll Certification For Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Week-Ending Date:
Contractor or Subcontractor Business Name:

WEEKLY PAYROLL

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE S	M	T	W	TH	F	S	Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS FICA	FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER	GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				HOURS WORKED EACH DAY																
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											O-TIME	$ Cash Fringe	4. $							
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											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											S-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							
											S-TIME	$ Base Rate	1. $							
													2. $							
													3. $							
											S-TIME	$ Cash Fringe	4. $							
													5. $							
													6. $							

*IF REQUIRED

7/13/2009
WWS-CP2

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

PAGE NUMBER _____OF

Information Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53.

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification.

Below are additional clarifications of specific job duties performed for certain classifications:

Asbestos Insulator

- Handle, install, apply, fabricate, distribute, prepare, alter, repair, or dismantle heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

Carpenter

- Assembly and installation of modular fumiture/fumiture systems.
  [New] a. Free-standing furniture is not covered. This includes: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two- position information access station, file cabinets, storage cabinets, tables, etc.
- Applies fire stopping materials on fire resistive joint systems only.
- Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings.
- Installation of curtain/window walls only where attached to wood or metal studs.

Cleaning Laborer

- The clean up of any construction debris and the general cleaning, including sweeping, wash down, mopping, wiping of the construction facility, washing, polishing, dusting, etc., prior to the issuance of a certificate of occupancy falls under the *Labor classification.*

Delivery Personnel (Revised)

- If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.
- An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer/tradesman and not a delivery personnel.

Electrician

- Installation or maintenance of telecommunication, LAN wiring or computer equipment.
- Low voltage wiring.

Fork Lift Operator

- Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.
- Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

Glaziers

- Installs light metal sash, head sills, and 2-story aluminum storefronts.
- Installation of aluminum window walls and curtain walls is the 'Soidtwork of the Glaziers and Ironworkers classification which requires either a blended rate or equal composite workforce.

Ironworkers

- Handling, sorting, and installation of reinforcing steel (rebar).
- Installation of aluminum window walls and curtain walls is the "joint work" of the Glaziers and Ironworkers classification which requires either a blended rate or equal composite workforce. Insulated metal and insulated composite panels are still installed by the Ironworker.
- Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation.

Insulator

- Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings. Past practice using the applicable licensed trades, Plumber, Sheet Metal, Sprinkler Fitter, and Electrician, is not inconsistent with the Insulator classification and would be permitted.

Lead Paint Removal

- Painter Rate
    1. Removal of lead paint from bridges.
    2. Removal of lead paint as preparation of any surface to be repainted.
    3. Where removal is on a Demolition project prior to reconstruction.
- Laborer Rate
    1. Removal of lead paint from any surface NOT to be repainted.
    2. Where removal is on a *TOTAL* Demolition project only.

Roofers

- Preparation of surface, tear-off and/or removal of any type of roofing, and/or clean-up of any areas where a roof is to be relaid.

Sheet Metal Worker

- Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, wall panel siding, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Insulated metal and insulated composite panels are still installed by the Iron Worker. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers.

Truck Drivers

- Truck Drivers delivering asphalt are covered under prevailing wage while on the site and directly involved in the paving operation.
- Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
- Hauling material off site is not covered provided they are not dumping it at a location outlined above.
- Driving a truck on site and moving equipment or materials on site would be considered covered work, as hs is part of the construction process.

✎ Any questions regarding the proper classification should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd, Wethersfield, CT 06 109 at (860) 263-6543.

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers (including caulking), Stone Masons

(Building Construction) and

(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Bricklayer (Residential- Fairfield County)

a. Paid Holiday: If an employee works on Christmas Eve until noon he shall be paid for 8 hours.

Electricians

Fairfield County: West of the Five Mile River in Norwalk

a. $2.00 per hour not to exceed $14.00 per day.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE, PROGRAM OR TRAINING

(Applicable to public works contracts as described by Conn. Gen. Stat. § 31-53(g) entered into *on or after July 1, 2009*)

(1) This requirement was created by Public Act No. 08-83, which is codified in Section 31-53b of the Connecticut General Statutes;

(2) The course, program or training is required for public works contracts as described by Conn. Gen. Stat. § 31-53(g) entered into on or after July 1, 2009;

(3) It is required of private workers (not state or municipal workers) and apprentices who perform the work of a mechanic, laborer or worker pursuant to the classifications of labor under Conn. Gen. Stat. § 31-53 on a public works project as described by Conn. Gen. Stat. § 31-53(g);

(4) The ten-hour construction safety and health course, program or training pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, a new mining training program approved by the Federal Mine Safety and Health Administration in accordance with 30 C.F. R. 48, or, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Proof of course, program or training completion shall be demonstrated through the presentation of a "completion document" (card, document, certificate or other written record issued by federal OSHA or by the Federal Mine Safety and Health Administration) as defined by Conn. State Agencies Regs. § 31-53b-1(2).

(8) Any completion document with an issuance date more than 5 years prior to the commencement date of the public works project shall not constitute proof of compliance with § 31-53b;

(9) For each person who performs the duties of a mechanic, laborer or worker on a public works project, the contractor shall affix a copy of the completion document

to the certified payroll required to be submitted to the contracting agency for such project on which such worker's name first appears;

(10) Any mechanic, laborer or worker on a public works project found to be in non-compliance shall be subject to removal from the project if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(11) Any such employee who is determined to be in noncompliance may continue to work on a public works project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(12) The statute provides the minimum standards required for the completion of a construction safety and health course, program or training by employees on public works contracts; any contractor can exceed these minimum requirements.;

(13) Regulations pertaining to § 31-53b are located at Conn. State Agencies Regs. §31-53b-1 *et seq.*, and are effective May 5, 2009. The regulations are posted on the CTDOL website;

(14) Any questions regarding this statute or the regulations may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNING THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

00860.01 LIST OF DRAWINGS

Contract Drawings that have the general and detailed titles following, accompany and form part of these Specifications.

MAPLE AVENUE SANITARY SEWER REPALCEMENT AND REHABILITATION
CONTRACT NO. 2013-04

Drawing No.	Description
COVER	DRAWING COVER SHEET
2	GENERAL NOTES, ABBREVIATIONS AND LEGEND FOR SANITARY SEWER
3	PLAN AND PROFILE FOR SANITARY SEWER - 1
4	PLAN AND PROFILE FOR SANITARY SEWER - 2
5	PLAN AND PROFILE FOR SANITARY SEWER - 3
6	DETAILS FOR SANITARY SEWER - 1
7	DETAILS FOR SANITARY SEWER - 2
8	DETAILS FOR SANITARY SEWER - 3
9	TRAFFIC MANAGEMENT PLAN -1
10	TRAFFIC MANAGEMENT PLAN -2
11	TRAFFIC MANAGEMENT PLAN -3
12	TRAFFIC MANAGEMENT PLAN -4
13	TRAFFIC MANAGEMENT PLAN -5
14	TRAFFIC MANAGEMENT PLAN -6
15	TRAFFIC DETAILS - 1
16	TRAFFIC DETAILS - 2

Additional drawings showing details in accordance with which the Work is to be constructed will be furnished from time to time by the Engineer and they shall then become a part thereof.

DIVISION 1
GENERAL REQUIREMENTS

THE METROPOLITAN DISTRICT

MAPLE AVENUE SANITARY SEWER REPLACEMENT & REHABILITATION

CONTRACT NUMBER 2013-04

TABLE OF CONTENTS

DIVISION 1 – GENERAL REQUIREMENTS

Section	Title
01010	SUMMARY OF WORK
01014	SPECIAL WORK SEQUENCES AND SUGGESTED SEQUENCE OF CONSTRUCTION
01025	MEASUREMENT AND PAYMENT
01030	ALLOWANCES
01035	MODIFICATION PROCEDURES
01040	COORDINATION
01044	PROGRESS
01045	CUTTING, CORING AND PATCHING
01046	CONTROL OF WORK
01046A	STATE OF CONNECTICUT CROSS CONNECTION CONTROL MANUAL
01050	FIELD ENGINEERING
01050A	DISTRICT LAYOUT & STATIONING PROCEDURE
01060	REGULATORY REQUIREMENTS
01060A	MDC SEWER REQUIREMENTS
01060B	MDC APPLICATION AND TRACKING DOCUMENT FOR INSTALLATION OF A TEMPORARY HYDRANT METER
01090	REFERENCE STANDARDS
01100	SPECIAL PROVISIONS
01100A	DEEP FORMS – BY-PASS REPORT FORMS
01100C	MDC NOTIFICATION PROCEDURE
01110	ENVIRONMENTAL PROTECTION PROCEDURES
01110A	TOWN OF WINDSOR NOISE ORDINANCE
01120B	SITE SPECIFIC HEALTH AND SAFETY PLAN
01152	APPLICATION FOR PAYMENT
01200	PROJECT MEETINGS
01210	PRE CONSTRUCTION CONFERENCE
01300	SUBMITTALS
01310	PROGRESS SCHEDULE
01320	CONSTRUCTION PHOTOGRAPHS
01370	SCHEDULE OF VALUES
01390	CONTRACTOR EVALUATION
01390A	CONTRACTOR EVALUATION FORM 50%
01390B	CONTRACTOR EVALUATION FORM 100%

01450 QUALITY CONTROL
01451 INDEPENDENT TESTING SERVICES
01500 TEMPORARY FACILITIES
01510 MAINTENANCE OF FLOW IN EXISTING SEWERS
01561 PEST CONTROL
01562 DUST CONTROL
01570 MAINTENANCE AND PROTECTION OF TRAFFIC
01570A SAMPLE REVISED TWO WEEK LOOK AHEAD FORM
01576 TRAFFIC CONTROL PERSONS
01600 DELIVERY, STORAGE AND HANDLING
01630 SUBSTITUTIONS AND PRODUCT OPTIONS
01700 CONTRACT CLOSEOUT
01720 AS-BUILT DOCUMENTS
01725 PRESERVATION AND RESTORATION OF PROJECT FEATURES
01740 WARRANTIES AND BONDS

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 LOCATION OF WORK:

A. The work of this Contract in the Town of Windsor, Connecticut on Maple Avenue from Lennox Avenue to Broad Street (State Route no. 159 Broad Street), as shown on the Drawings. The site is located opposite the Town Hall and approximately 700 feet south of State Numbers Route 305 and 75.

1.02 SCOPE OF WORK:

A. Furnish all labor, materials, equipment and incidentals required and construct improvements to the wastewater collection system as shown on the Drawings and specified herein.

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

1. Saw cut pavement, sidewalks, and driveways affected by new sewer construction and storm drainage system.

2. Remove and replace portions of the existing storm drainage system at the east end of Maple Avenue.

3. Remove selected existing sanitary sewer manhole and replace new Type II (4-foot diameter) precast concrete sewer manholes.

4. Remove and replace existing 8-inch styrene rubber plastic pipe with a new 8-inch SDR35 new polyvinyl chloride (PVC) sewer pipe between existing manholes

5. Remove and replace wye branches and laterals with PVC piping at all active sewer services up to street line.

6. Perform point repair to sections of vitrified clay pipe main sewer pipe.

7. Furnish and install cured-in-place lining of existing 8-inch and 10-inch vitrified clay pipe including any required heavy cleaning and root removal.

8. Remove and replace existing sanitary sewer manhole frame and covers set to proposed grades.

9. Furnish and install temporary pavement over trench excavation and temporary pavement markings disturbed by the excavations. The Town of Windsor to install final pavement, curb to curb, along Maple Avenue from Lenox Ave to Broad Street, under a separate Town project. Installation of bituminous concrete lip curbing and final pavement markings to performed also by the Town of Windsor.

10. Remove and replace concrete walkways, and bituminous concrete driveways affected by replacement of sewer laterals.

11. Restore land and lawn to existing condition in private property areas.

12. Furnish, install and remove temporary traffic provisions to facilitate construction.

1.03 WORK BY OTHERS:

A. Refer to Article 7 of the General Conditions for additional requirements.

B. The following work will be performed by others after completion of the Work of this Contract.

1. Upon completion of this project, the Town of Windsor shall perform pavement reclamation of the roadway along Maple Avenue from Broad Street to Lennox Avenue; Spring Street from Elm Street to Bloomfield Avenue; and Court Street from Maple Avenue to Bloomfield Avenue. In addition, the Town shall adjust existing drainage structures and reshape the roadway subbase to proposed elevations. Following the preparation of the roadway base, the Town of Windsor shall install roadway pavement, driveway aprons, and bituminous concrete lip curbing.

2. State of Connecticut, Department of Transportation shall perform pavement milling and resurfacing along Broad Street.

1.04 WORK SEQUENCE:

A. Operation of the existing water, sewer and drainage system in the project area must be maintained by the Contractor throughout the duration of the project and use of portions of the new work may be required prior to completion of the project to maintain operation. A suggested sequence of construction may be noted in the Contract Documents. The Contractor may use the suggested sequence or develop a different plan; however, he will be responsible for the continuous flow of storm water, sewage and drinking water throughout the project. The Contractor shall submit his/her own sequence to the Engineer for review prior to the start of construction in accordance with Section 01300. The proposed

sequence shall be in accordance with the accepted schedule submitted by the Contractor.

B. Perform Work in suggested sequence listed below to ensure completion of the work in the contract time. Completion dates of the various stages shall be in accordance with the approved construction schedule submitted by the Contractor.

1. Coordinate construction activities with Owner, Town, CTDOT, Engineer, utility companies, and private property owners to minimize conflicts and to facilitate Owner, Town, private property owners, and public usage.

2. Perform site investigations as shown on the Drawings or described in the Specifications

3. Obtain all permits from the Owner, CTDOT, CTDEEP, and the Town of Windsor.

4. Establish site controls including but not limited to clearing, temporary facilities, and vehicular and pedestrian traffic.

5. Saw cut pavement, sidewalks, and driveways affected by new sewer construction and storm drainage system.

6. Remove and replace portions of the existing storm drainage system at the east end of Maple Avenue.

7. Remove selected existing sanitary sewer manhole and replace new Type II (4-foot diameter) precast concrete sewer manholes.

8. Remove and replace existing 8-inch styrene rubber plastic pipe with a new 8-inch SDR35 new polyvinyl chloride (PVC) sewer pipe between existing manholes

9. Remove and replace wye branches and laterals with PVC piping at all active sewer services up to street line.

10. Perform point repair to sections of vitrified clay pipe main sewer pipe.

11. Furnish and install cured-in-place lining of existing 8-inch and 10-inch vitrified clay pipe including any required heavy cleaning and root removal.

12. Remove and replace existing sanitary sewer manhole frame and covers set to proposed grades.

13. Furnish and install temporary pavement over trench excavation and temporary pavement markings disturbed by the excavations. The Town of Windsor to install final pavement, curb to curb, along Maple Avenue from Lenox Ave to Broad Street, under a separate Town project. Installation of bituminous concrete lip curbing and final pavement markings to performed also by the Town of Windsor.

14. Remove and replace concrete walkways, and bituminous concrete driveways affected by replacement of sewer laterals.

15. Restore land and lawn to existing condition in private property areas.

16. Furnish, install and remove temporary traffic provisions to facilitate construction.

1.05 CONTRACTOR'S USE OF PREMISES:

A. Contractor shall limit the use of the premises for the performance of the Work and storage of materials and equipment to allow for the Owner's use in operating and maintaining the existing water, sewer and drainage system and facilities within the project area.

B. Locations where the Owner has secured temporary or permanent easements which the Contractor can utilize for performance of the Work have been noted on the Contract Documents. The Contractor shall not utilize or disrupt privately owned properties without prior written authorization from the property owner. Copies of agreements for use of private properties shall be submitted to the Engineer prior to any use of the property. Owner shall be held harmless for any damage to property during the project duration.

C. Contractor shall coordinate with Owner necessary access for normal maintenance requirements.

D. Contractor shall assume full responsibility for security of all his and his subcontractors' materials and equipment stored on the site.

E. If directed by the Owner, Contractor shall move any stored items which interfere with operations of Owner.

F. The Contractor shall obtain and pay for use of additional storage or work areas if needed to perform the Work.

END OF SECTION

SECTION 01014

SPECIAL WORK SEQUENCES AND SUGGESTED SEQUENCE OF CONSTRUCTION

PART 1 - GENERAL

1 .01 GENERAL REQUIREMENTS

A. This Section of the specifications covers the scope and sequence of Work. The Contractor shall furnish all labor, materials, equipment, and incidentals required to complete the work as shown on the drawings and as specified herein.

B. The sewer system must provide continuous service during the construction period and the capacity of these systems may not be reduced by the Contractor without prior written approval of the Owner.

C. In general, no work which affects or could affect existing system operations or service shall be performed without a specific detailed plan by the Contractor approved in advance by the Engineer and the Owner. All requests for system diversions, shutdowns, modifications, etc., shall be in writing to the Owner with a copy to the Engineer.

1.02 DEFINITIONS AND TERMS

A. Construction Scheduling Constraints: The constraints to performance of the work required because of special sequencing with other parts of the work, calendar time constraints and special testing, commissioning and work procedures are identified in this Section. These constraints are in addition to the standard procedural constraints such as shop drawings, testing, commissioning, training, etc and the above plant operational constraints. These constraints shall be included in the Contractor's progress schedule.

B. Special Conditions: Certain special conditions, if any, related to performance of the work are identified in this section. If they affect the scheduling of the work, they shall be included in the Contractor's progress schedule.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings showing details of all temporary services, bypasses and tie-ins to existing systems.

B. The Contractor shall submit, in accordance with Section 01300 and 01310, the sequence of construction and schedule for the work for Engineer and Owner review

and approval prior to commencement of work.

1.04 NOTIFICATION REQUIREMENT

A. Give a minimum of 7 days advance notice to the Owner and Engineer of each component proposed for shutdown or disruption, all of which shall be subject to Owner approval and limitations.

1.05 WORK HOURS

1. No work is to be done on Owner holidays, Saturdays, Sundays, or outside of the regular Owner's business work hours without prior written approval from the Owner. The Owner holidays are as follows: New Year's Day, Martin Luther King, Jr. Day, President's Day, Good Friday, Town of Windsor Shad Derby Festival on May 18, 2013, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Day after Thanksgiving, ½ Day before Christmas Day, Christmas Day, ½ Day before New Year's Day. Refer to section 01570 for additional information on work hours. The Contractor will be required to obtain and maintain all necessary permits from the City/Town or State DOT including the street excavation, obstruction, noise and building permits. All proposed work hours shall be submitted to the Owner and the City / Town for approval. Contractor shall obtain written approval prior to commencement of any work.

1.06 TIE-IN PREPARATIONS

A. Where new systems are to be tied-into existing systems, which are required to be shutdown to make the tie-in, the new system shall be fully prepared in anticipation of the tie-in to minimize downtime of the existing system. The new system shall be fully tested to the maximum extent possible prior to the tie-in. Measurements shall be taken to ensure that the new system is of the correct size, length and alignment to complete the tie-in. Supply a list of all materials and equipment needed to accomplish the tie-in and review the proposed tie-in with the Engineer and Owner.

1.07 ROADWAY RESTORATION COORDINATION

A. Final pavement overlays along Maple Avenue shall be performed by the Town of Windsor. Final pavement overlays on CTDOT Right of Way shall commence no sooner than 90 days following utility improvements, unless written approval is received from the Owner, Town of Windsor, or State DOT where the work is taking place. Roadway closures and construction activity shall be consistent with Traffic Management Plans and Section 01570.

Refer to section 01570 for permit requirements.

PART 2 – PRODUCTS - NOT USED

PART 3 – PRE-CONSTRUCTION REQUIREMENTS

A. Execute agreement and submit insurance and bonds.
B. Submit schedule of values.
C. Submit Health and Safety Plan.
D. Submit Traffic Management Plan
E. Submit shop drawings and other technical submittals,
F. Acquire all permits.
G. Submit excavation support plans and design.
H. Submit dewatering plans and design.
I. Set up site trailer or field office.
J. Submit location of staging with letter of agreement on private property.
K. Submit location of off-site disposal if required for this project.
L. Conduct test pit program.
M. Submit construction phasing plan
N. Start construction

PART 4 - SUGGESTED CONSTRUCTION PHASING PLAN

A. For sewer replacement and lateral rehabilitation, the sequence of work shall be:

1. Coordinate construction activities with Owner, Town, CTDOT, Engineer, utility companies, and private property owners to minimize conflicts and to facilitate Owner, Town, private property owners, and public usage.

2. Perform site investigations as shown on the Drawings or described in the Specifications

3. Obtain all permits from the Owner, CTDOT, CTDEEP, and the Town of Windsor.

4. Establish site controls including but not limited to clearing, temporary facilities, and vehicular and pedestrian traffic.

5. Saw cut pavement, sidewalks, and driveways affected by new sewer construction and storm drainage system.

6. Remove and replace portions of the existing storm drainage system at the east end of Maple Avenue.

7. Remove selected existing sanitary sewer manhole and replace new Type II (4-foot diameter) precast concrete sewer manholes.

8. Remove and replace existing 8-inch styrene rubber plastic pipe with a new 8-inch SDR35 new polyvinyl chloride (PVC) sewer pipe between existing manholes

9. Remove and replace wye branches and laterals with PVC piping at all active sewer services up to street line.

10. Perform point repair to sections of vitrified clay pipe main sewer pipe.

11. Furnish and install cured-in-place lining of existing 8-inch and 10-inch vitrified clay pipe including any required heavy cleaning and root removal.

12. Remove and replace existing sanitary sewer manhole frame and covers set to proposed grades.

13. Furnish and install temporary pavement over trench excavation and temporary pavement markings disturbed by the excavations. The Town of Windsor to install final pavement, curb to curb, along Maple Avenue from Lenox Ave to Broad Street, under a separate Town project. Installation of bituminous concrete lip curbing and final pavement markings to performed also by the Town of Windsor.

14. Remove and replace concrete walkways, and bituminous concrete driveways affected by replacement of sewer laterals.

15. Restore land and lawn to existing condition in private property areas.

16. Furnish, install and remove temporary traffic provisions to facilitate construction.

If inserted here, the following suggested construction phasing plan is intended to be a guide only. The Contractor shall submit a detailed proposed construction phasing plan at least 30 days prior to commencement of any construction activities.

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1- GENERAL

1.01 METHODS FOR MEASUREMENT AND ESTIMATING

At appropriate points in this text, specifications are given with respect to measuring or estimating certain quantities and the sums due for the same. Except as otherwise provided, the Engineer shall determine the appropriate method for measuring and computing each quantity, and for estimating the sums due for the various kinds of work and material, using such methods, tools, and degrees of precision as are suitable for the particular measurement, item, or computation. When so requested by the Engineer, assistance in measuring or determining quantities shall be provided by furnishing the help of unskilled laborers on the site, by furnishing copies of invoices, or by other means.

For estimating quantities in which the computations of areas by analytic and geometric methods would be laborious, as determined by the Engineer, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas and may be used for this purpose.

1.02 PAYMENT

In general, payment will be made for all Contract work satisfactorily completed through the end of the previous month. The payment will include any additional work which has been completed and approved and change order work agreed upon by the District and Contractor which has been completed and approved.

The District shall hold retainage from payments as described in the Agreement, Section 00500, Article 6.

Monthly estimates of payment may also indicate reduction or increase of the total Contract price when an approved change order results in a net reduction or net increase in the cost and quantity of work to be performed under the Contract.

Special billings and charges against the Contract as credit or payment to the District, that are not for change order work, may be subtracted from monies due on any monthly estimate of payment but shall not serve to reduce the total Contract price.

1.03 UNIT PRICES

No separate measurement or payment will be made for Work called for in the Contract Specifications, unless specifically covered under the Bid items listed below. All costs associated with this Work will be considered incidental to the Contract Bid price, and

included in unit price items.

The Work will be measured and paid for at the Contractor's unit Bid price or lump sum item cost as indicated on the Bid form. Those payable Work items, and related prices as Bid, will be the basis for all compensation to the Contractor for Work performed under this Contract. Work not specifically included as a Bid item, but which is required to properly and satisfactorily complete the Work is considered ancillary and incidental to the Bid item Work, and payment for such Work is considered to be included in the values as Bid for payable items. Compensation for all unit Bid price Work will be made based on the measured quantity of Work and the Standard limits (where appropriate).

The Owner reserves the right to withhold or to reduce payments due for payable items of work under the Contract where, in the opinion of the Owner, work ancillary and incidental to the payable work is not completed in a satisfactory or timely manner.

Payment will be computed on the basis of the unit price bid in the Bid Form for each item and the quantity of units completed. Unit prices are to include cost of all necessary materials, labor, equipment, overhead, profit and other applicable costs. (See Par. 1.05, this Section.)

The District reserves the right to increase or decrease the scope of the Contract work by twenty-five (25%) percent of the original scope.

All projects funded by DEEP shall conform to DEEP Clean Water Fund Regs. Section 22a-482-4(k)(2)(A)(i); the other projects on water, storm drain and sewer contracts and on contracts for related structures, but not on paving contracts or funded by DEEP, either party to the contract may request a revised contract consideration when the quantity of any major item contained in the Bid Form which constitutes more than ten percent (10%) of the value of the work increases or decreases by more than twenty percent (20%) due to changes by the District to the Contract Drawings, either party may request that the unit price for such item be reviewed and revised accordingly. Neither the District nor the Contractor shall unreasonably withhold its consent to such revision.

1.04 LUMP SUM PRICES

Payment will be computed on the basis of the percentage of work completed on each item in the contract Bid Form. Lump sum prices are to include the cost of all necessary materials, labor, equipment, overhead, profit and other applicable costs. (See Par. 1.05 this Section.)

The Contractor's breakdown of the lump sum bid may be used as a guide to determine the percentage of completion.

1.05 PRICES INCLUDE

The prices stated in the Bid Form include full compensation not only for furnishing all the labor, equipment and material needed for, and for performing the work and building the structures contemplated by, the Contract, but also for assuming all risks of any kind for expenses arising by reason of the nature of the soil, ground water, or the action of the elements; for all excavation and backfilling; for the removal of and delay or damage occasioned by trees, stumps, tracks, pipes, ducts, timber, masonry or other obstacles; for removing, protecting, repairing, or restoring, without cost to the District, all pipes, ducts, drains, sewers, culverts, conduits, curbs, gutters, walks, fences, tracks, or other obstacles, road pavements and other ground surfacing whether shown on plans or not for draining, damming, pumping or otherwise handling and removing, without damage to the work or to other parties, and without needless nuisance, all water or sewage from whatever source which might affect the work or its progress, or be encountered in excavations made for the work; for furnishing, inserting and removing all sheeting, shoring staging, cofferdams, etc.; for all signs, fencing, lighting, watching, guarding, temporary surfacing, bridging, snow removal, etc., necessary to maintain and protect travel on streets, walks and private ways; for making all provisions necessary to maintain and protect buildings, fences, poles, trees, structures, pipes, ducts and other public or private property affected or endangered by the work; for the repair or replacement of such things if injured by neglect of such provisions for removing all surplus or rejected materials as may be directed; for replacing, repairing and maintaining the surfaces of streets, highways, public and private lands if and where disturbed by work performed under the Contract or by negligence in the performance of work under the Contract; for furnishing the requisite filling materials in case of any deficiency or lack of suitable materials; for obtaining all permits and licenses and complying with the requirements thereof, including the cost of furnishing any security needed in connection therewith; for any and all expense on account of the use of any patented device or process; for protection against inclement or cold weather; for all expenses incurred by or on account of the suspension, interruption or discontinuance of work; for the cost of the surety bond and adequate insurance; for all taxes, fees, union dues, etc., for which the Contractor may be or become liable, arising out of his operations incidental to the Contract; equipment on the site and away there from; for providing a field office and its appurtenances and for all general and incidental expenses; for tools, implements and equipment required to build and put into good working order all work contemplated by the Contract; for maintaining and guaranteeing the same as provided; and for fulfilling all obligations assumed by the Contractor under the Contract and its related documents.

1.06 MISCELLANEOUS EXPENSE, OR ESTABLISHING AND DISMANTLING EXPENSE

The price established by the Bid Form for "Miscellaneous Expense" or for "Mobilization and Demobilization Expense," if any specific price for such items is set out in the Bid Form, shall include full compensation for furnishing the performance or surety bond and other securities required, all preliminary bidding and organizational expenses,

necessary permits, moving plant and equipment onto and away from the job, construction of temporary roads, etc., and for all other materials, supplies, tools, equipment, labor financing, supervision, temporary structures, field office, sanitary conveniences, and any and all other expenses incurred in carrying out the work and furnishing the material, keeping records and making reports required, and assuming risks, which have not been included in prices bid in other items of the Bid Form.

If no price was established for "Miscellaneous Expense" or for "Mobilization and Demobilization Expense", then all the above items of expense, material, work, etc., shall be understood to have been included within the price or prices bid in another item or items of the Bid Form.

1.07 PROVISIONAL ITEMS

The work identified in the Bid Form as Provisional Items shall only be executed with the written permission of the Engineer. The Engineer may choose to delete one, more than one or all items marked “provisional items” from the Contract. (The Designer may add additional bid items if required by the Project.)

PART 2 – BID ITEMS

2.01 SEWER MAIN AND LATERAL REPLACEMENT (Items 1a and 1b)

A. METHOD OF MEASUREMENT

1. Removal of existing sanitary sewer pipe and replacement with new 8-inch PVC sewer pipe (Item 1a) will be measured on a linear foot basis to the nearest tenth of a foot. Measurement will be made along the ground surface above and parallel along the horizontal pipe centerline with no deduction for fittings and will be to the center of manholes. Measurement for payment does not signify the sewer is accepted.

2. Removal of existing lateral pipe and replacement with new 6-inch PVC lateral sewer pipe (Item 1b) shall be measured in place on a linear foot basis to the nearest tenth of a foot. Measurement will be made along the ground surface above and parallel along the horizontal centerline of the pipe with no deductions for fittings. Measurement for payment does not signify the lateral is accepted.

   a. Only those sewer services that are replaced or relocated as directed by the Engineer shall be measured for payment on a linear foot basis under this Item. Services that are damaged by the Contractor through error or convenience shall not be measured for payment.

b. All sewer services to be removed and replaced shall be to the property line or to the extents shown on the Drawings unless directed by the Engineer.

B. Payment

1. Payment for sewer pipe (Items 1a and 1b), will be made for the respective quantities as determined above at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for removal and proper disposal of existing sewer pipe and service connections to be replaced, including maintenance of flow in existing sewer including by-pass pumping; safeguarding open excavations; furnishing, laying and jointing the new pipe, connection to existing piping, fittings and couplings; crushed stone bedding and haunching from 6-inches below the bottom of the pipe to the top of the pipe; coarse sand or fine gravel refill from the top of the crushed stone haunching to the level 24 inches above the top of the pipe; geotextile fabric envelope; bank run gravel from a level 24 inches above the top of the pipe to the sub-grade level of the surfacing material; trench consolidation; utility identification tape; cleaning and testing the pipe (including TV inspection); replacement of existing utilities disturbed during construction; connections to existing and/or new manholes including core-boring of existing or new manholes and subsequent sealing of area around the pipes; removal and disposal of portions of existing sewer manholes and reworking existing inverts and watertables; care and protection of property; insulating existing power lines (both overhead and buried); permanent and temporary support of utilities; coordination with other contractors and utilities; coordination with the Town of Windsor; and all costs, labor, materials, and equipment incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices.

2. Payment for earth excavation for Items 1a and 1b shall be paid for under Items 5a and/or 5b.

2.02 SEWER MAIN AND LATERAL REHABILITATION (Items 2a through 2d)

A. METHOD OF MEASUREMENT

1. Measurement for Cured In Place Pipe (Items 2a through 2b) will be by the linear foot along the centerline of pipe, the length of manhole inverts (as measured between inside walls of the manholes) being deducted, and will be paid for at the contract unit price per linear

foot lined. Measurement for payment does not signify the Cured In Place Pipe is accepted.

2. 10% of the bid price will be held on payment for Item 2a and 2b until the required testing work is complete and satisfactory to the Engineer or District.

3. Point Repairs (Items 2c and 2d) for sanitary sewer mains will be measured as the number actually installed in the completed project and accepted by the Engineer. Each point repair shall be considered as a minimum length of 4 linear feet to a maximum length of 30 linear feet of sanitary sewer for each point repair within that sewer reach. Repairs beyond the 30 are not anticipated. Measurement shall be made along the horizontal centerline of the pipe with no deduction for fittings and will be to the centerline of the adaptor at connections to existing pipe.

B. Payment

1. Payment for cured-in place pipe (Items 2a and 2b), for sewer mains, will be made for the respective quantities, at the sizes defined, as determined above at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for furnishing all materials, labor, tools, equipment and appurtenances required or otherwise necessary to satisfactorily install the cured-in-place lining, including full compensation for project notices; coordination with property owners and the Owner; removal, transportation, and disposal of debris from heavy hydraulic cleaning and root removal; pre- and post-construction television inspection (from manhole to manhole); furnishing written logs and DVDs; stopping active infiltration; removal and disposal of debris; removing protruding taps; obtaining water; public notification; sewer flow control; maintenance of flow in existing sewer; bypass pumping; acceptance testing, care and protection of property; coordination with other contractors and utilities; materials testing and acceptance, environmental protection; and coordination with the Town of Windsor for which separate payment is not provided under other items in the Schedule of Prices.

2. Payment for sewer main point repairs (Items 2c and 2d) will be measured for payment by the number of sewer point repairs completed at the sizes defined, as determined above at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation cutting of surfaces; excavation (including hand excavation); disposal of all excavated material; removal and disposal of existing pipe types to be replaced; maintenance of flow

in existing sewer; by-pass pumping; safeguarding open excavations; furnishing, laying and jointing the new PVC, fittings and couplings; furnishing and installing PVC piping and wye branches; connections to existing pipe including concrete encasement collar; crushed stone bedding and haunching from 6-inches below the bottom of the pipe to the top of the pipe, coarse sand or fine gravel refill from the top of the crushed stone haunching to the level 24 inches above the top of the pipe; geotextile fabric envelope; bank run gravel from a level 24 inches above the top of the pipe to the sub-grade level of the surfacing material; trench consolidation; utility identification tape; temporary pavement trench repair or other restoration as specified; cleaning (including heavy hydraulic and root removal) and testing the pipe; pre- and post-construction television inspection; furnishing written logs and DVDs crossing, supporting of existing structures and utilities; replacement of existing utilities disturbed during construction; connections to existing and/or new manholes including coring of existing manholes; care and protection of property; insulating existing power lines (both overhead and buried); coordination with other contractors and utilities; coordination with the Town of Windsor, and all costs; labor, materials, and equipment incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices

2.03 MANHOLES (Items 3a through 3c)

A. METHOD OF MEASUREMENT

1. Manholes furnished and installed, complete and in place (Item 3a), as shown, specified and directed shall be measured in vertical feet from the invert of the lowest pipe invert in the manhole to the top of the manhole frame. Measurement shall be to the nearest tenth of a foot.

   a. Bank gravel above the 24-inch level above the top of the pipes made necessary for the replacement of unsuitable material will be measured by the cubic yard after compaction. Payment will be made for bank gravel within vertical lines 24 inches beyond the outside of the manhole on each side and horizontal lines 24 inches above the top of the pipes and at the subgrade level for the surfacing material.

2. Removal of existing sanitary sewer manhole frames and covers and replacement with new sewer manhole frames and covers (Item 3b) shall be measured as each, furnished and installed, complete

and in place, as shown, specified and directed will be measured for payment by the number of sewer manholes frames and covers removed and replaced as a set.

3. Removal of existing sanitary sewer manholes (Item 3c) will be measured by the actual number of sewer manholes removed in the completed project and accepted by the Engineer.

B. BASIS OF PAYMENT

1. This work will be paid for at the Contract unit price each for Manhole (Item 3a) complete in place, which price shall include all work described in this section, including removal and disposal of existing sewer manhole and associated appurtenances; shoring; bracing; 3/4" crushed stone foundation; geotextile fabric; backfilling; furnishing and installing sewer manhole frame and cover; installing a concrete mortar collar for frame and cover; maintenance of flow in existing sewer; bypass pumping; acceptance testing; care and protection of property; coordination with other contractors and utilities; materials testing and acceptance, environmental protection; coordination with the Town of Windsor; and all costs, labor, materials, and equipment, and all else incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices.

2. This work will be paid for at the Contract unit price each for removing and replacing existing manhole frame and cover (Item 3b), complete in place, which price shall include all work described in this section, including removal and disposal of existing sewer manhole frame and grate; removal, disposal and reconstruction of existing manhole chimney; and associated appurtenances; shoring; bracing; backfilling; acceptance testing; coordination with other contractors and utilities; materials testing and acceptance, environmental protection; coordination with the Town of Windsor and utility companies; and all costs, labor, materials, and equipment, and all else incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices.

   a. Payment for earth excavation for Items 3a through 3c shall be paid for under Items 5a and/or 5b.

   b. Bank gravel from the elevation of the top of the crushed stone bedding to 24 inches above the top of the pipes entering the manhole will not be measured for payment, but

will be considered as included in the unit price bid for the respective pipelines.

2.04 DRAINAGE SYSTEM IMPROVEMENTS (Item 4a through 4g)

A. METHOD OF MEASUREMENT

1. Drain pipe (Item 4a and 4b), of the size and type specified in the Schedule of Prices, will be measured in place on a linear foot basis to the nearest tenth of a foot. Measurement will be made along the ground surface above and parallel along the horizontal pipe centerline with no deduction for fittings and will be to the inside wall of the manhole or catch basin. Measurement for payment does not signify that the drain pipe is accepted.

2. Removal of existing manhole structures (Item 4c will be measured by the actual number of existing manholes removed in the completed project and accepted by the Engineer.

3. New type II precast concrete drain manholes (Item 4d) will be measured in vertical feet from the invert of the lowest pipe invert in the manhole to the top of the manhole frame. Measurement will be to the nearest tenth of a foot.

4. Precast concrete catch basins (Item 4e) will be measured in vertical feet from the bottom of the catch basin sump to the top of the catch basin frame. Measurement will be to the nearest tenth of a foot.

5. Removal of existing catch basins structures (Item 4f) will be measured by the actual number of existing catch basins removed in the completed project and accepted by the Engineer.

6. Removal of existing drain pipe (Items 4g), all sizes, will be measured on a linear foot basis to the nearest tenth of a foot. Measurement will be made along the ground surface above and parallel along the horizontal pipe centerline with no deduction for fittings.

B. PAYMENT

1. Payment for drain pipe (Items 4a and 4b) will be made for the respective quantities as determined above at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for furnishing and installing the new drain pipe, furnishing crushed stone bedding and encasement and 24 inches of fine gravel or coarse sand to be installed over the pipe; geotextile

fabric; furnishing and installing utility identification tape, pipe closures, maintenance of flow, furnishing, laying, jointing, cleaning and testing the pipe, television inspection of drain pipes, coordination with other contractors and utilities, support and protection of existing utilities and structures, replacement of existing utilities disturbed during construction; connections to existing and/or new manholes and/or catch basins including coring of existing manholes and/or catch basins; care and protection of property; insulating existing power lines (both overhead and buried); coordination with other contractors and utilities; and all costs, labor, materials, and equipment all incidental work, and all else incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices.

a. Payment will be made for pipe only when it is installed in the ground and not so-called proportional payment for pipe on the site but not yet installed. Payment for satisfactorily installed and backfilled pipe will be paid at 90 percent of the Contract Unit Price. The remaining 10 percent will be paid upon the satisfactory completion of the pipe testing.

2. Payment for removal of existing drain manholes (Item 4c) will be made for the respective quantities as determined above at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for removal and disposal of existing drain manhole and associated appurtenances, for filling and plugging of existing manhole connections to be abandoned, maintenance of flow, bypass pumping; support and protection of existing utilities and structures and all costs, labor, materials, and all else incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices.

3. Payment for precast concrete drain manholes (Item 4d) shall be measured in vertical feet from the invert of the lowest pipe invert in the manhole to the top of the manhole frame. Measurement shall be to the nearest tenth of a foot. This price and payment shall be full compensation for furnishing and installing precast sections and bases; all forms, reinforcing, concrete and masonry materials; manhole rungs; inverts (water table); 3/4" crushed stone foundation; geotextile fabric; furnishing and installing frames and covers; testing; maintenance of flow in existing sewers; bypass pumping and all costs, labor, materials, and equipment incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices.

4. Payment for precast concrete catch basins (Item 4e) shall be measured in vertical feet from the bottom of the catch basin sump to the top of the catch basin frame. Measurement shall be to the nearest tenth of a foot. This price and payment shall be full compensation for furnishing and installing new precast catch basin sections and bases; furnishing and installing frames and grates; all forms, reinforcing, concrete and masonry materials; 3/4" crushed stone foundation; geotextile fabric; testing; maintenance of flow, bypass pumping and all costs, labor, materials and equipment incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices.

5. Payment for removal of existing catch basins (Item 4f) will be made for the respective quantities as determined above at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for removal and disposal of existing catch basin and associated appurtenances, for filling and plugging of existing catch basin connections to be abandoned, maintenance of flow, bypass pumping; support and protection of existing utilities and structures and all costs, labor, materials, and all else incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices.

6. Payment for removal of drain pipe (Item 4g) will be made for the respective quantities as determined above at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for removal and disposal of existing drain pipe; maintenance of flow, bypass pumping; safeguarding open excavations; care and protection of property; coordination with other contractors and utilities; and all costs, labor, materials, and equipment incidental thereto, for which separate payment is not provided under other items in the Schedule of Prices.

2.05 EARTHWORK

A. Measurement of Earth Excavation (Item 5a and 5b)

1. Measurement for payment for earth excavation (Item 5a and 5b) shall be on a cubic yard basis as measured in the field by the Engineer. For Earth Excavation less than 10 feet in depth (Item 5a) the depth will be measured from the existing ground, road or other surface to the bottom of the stone sub-base, and will not exceed 10 feet. Any depth exceeding 10 feet will be paid under Item 5b, Earth Excavation greater than 10 feet.

2. Measurement for payment of earth excavation for manhole installation and pipe installation and/or replacement will extend to the width as specified.

B. Measurement for Fill Materials (Item 5c through 5g)

1. Measurement for bank run gravel (Item 5c), crushed stone (Item 5d), flowable fill (Item 5e), miscellaneous concrete (Item 5f), test pits (Item 5g), will be on a cubic yard basis. The depth shall be the actual depth placed in the completed work, but in no case shall this exceed the depth approved by the Engineer. No allowance shall be made for loss from consolidation of material from compaction. Width measurement limits for payment purposes shall be as shown on the trench and structure payline details included herein. Truck count, slips, or other indirect forms of measurement shall not be allowed.

2. The quantity of flowable fill (Item 5e) to be paid for will be the actual volume placed in the completed work, but in no case will this exceed the quantity approved by the Engineer.

C. Measurement for Test Pits (Item 5g)

1. Test pits (Item 5g) shall be measured in cubic yards in accordance with the following established volume rates:

a. Test Pit Volume

Test Pit Depth (ft)	Cubic Yards per Vertical Foot
0-8	1.5
8-12	2.0
12-16	2.5

2. Measurement for payment will be made only for test pits directed by the Engineer. Test pits constructed for the Contractor's sole benefit shall not be measured for payment.

D. Payment for Earth Excavation (Item 5a and 5b)

1. Payment of the bid price for earth excavation (Item 5a and 5b) shall be made for the quantity as above determined at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for all excavation; cutting of surfaces; removing and disposing of excess materials; earth support systems, including placing and removing sheeting or bracing; existing utility and existing structure protection and relocation; dewatering; temporary

and permanent support of crossed or undermined utilities, drains, pipes, cables, structures, etc; utility company coordination; coordination with other contractors and utilities; replacement of existing utilities disturbed during construction; ; backfilling and compaction of excavations with suitable native materials; testing; and restoration of all areas not otherwise specifically included in other items environmental protection; maintaining and handling drainage flows protection of or removal and replacement of existing shrubs, trees, signs, fences, property markers and other features; and restoration of all areas not otherwise specifically included in other items. Such payment shall include the furnishing of all labor, equipment and materials required for or incidental to the work.

2. No payment shall be made hereunder for widening trenches for safety or stability thereof or for excavation below grade or any related remedial construction work for reason of the Contractor's inability to maintain a stable trench bottom, or for excavation outside limits not authorized by Engineer.

F. Payment for Fill Material (Item 5c and 5e)

1. Payment for furnishing and placing bank run gravel (Item 5c), crushed stone (Item 5d), and flowable fill (Item 5e), shall be made for the quantity determined above at the respective price in the Schedule of Prices. This price and payment shall be full compensation for furnishing, hauling, placing, spreading, and compacting, and all costs, labor, materials, and equipment incidental thereto for which separate payment is not provided under other items.

2. Payment for pipe bedding and encasement materials shall be included with the respective pipe items.

G. Payment for Miscellaneous Concrete (Item 5f)

1. Payment for miscellaneous concrete (Item 5f) shall be made for the quantity as above determined at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for furnishing and placing the concrete including form work, reinforcing and other materials required.

H. Payment for Test Pits (Item 5g)

1. Payment for test pits (Item 5g) shall be made for the quantities as determined herein at the price bid in the Schedule of Prices. This price and payment shall be full compensation for cutting of

surfaces, excavation (including hand excavation), disposal of all excavated material, bank run gravel backfill, compaction, temporary pavement trench repair or other restoration as specified, required measurements and sketches, photographs, and incidental work required to complete the test pits for which separate payment is not provided under other items in the Bid Form.

2.06 REMOVAL AND DISPOSAL OF CONTAMINATED AND POLLUTED SOIL (Item 6a through 6c)

A. METHOD OF MEASUREMENT

1. Measurement for payment of removal and disposal of contaminated soil (Item 6a) and polluted soil (Item 6b) shall be based on the actual verified tonnage removed and disposed of off-site as directed and approved by the Owner. The tonnage shall be determined only by weigh slips that have been properly signed by the disposal facility. . Removal and disposal of contaminated and polluted soil quantity estimated in the Schedule of Bid prices is based on test borings in the area, actual quantities shall be based on sampling by the Contractor.

2. Measurement for payment for performing hazardous materials procedures (Item 6c) associated with pipe installation and in accordance with the specifications shall be on a lump sum basis.

B. BASIS OF PAYMENT

1. Payment of the bid price for removal and disposal of contaminated soil (Item 6a) and polluted soil (Item 6b) will be full compensation for all excavation, stockpiling, testing, hauling, and proper off-site disposal of the material and all labor, equipment, materials, and documentation required for or incidental of the work.

2. Payment of the lump sum bid price (Item 6c) shall be full compensation for all labor, materials and equipment required to complete the work as described herein or shown on the drawings, including preparation of and compliance with a Health and Safety plan, providing a site safety officer and HAZWOPER trained crew, minimum Modified Level D protection, equipment decontamination, polyethylene sheeting, and delays associated with sampling and material segregation.

2.07 PAVED SURFACE RESTORATION (Item 7a and 7b)

A. METHOD OF MEASUREMENT

1. Measurement for temporary trench pavement (Item 7a) shall be on a square yard basis installed and complete as shown, specified and directed by the Engineer consisting of processed aggregate base material and bituminous concrete.

2. Measurement for permanent trench pavement (Item 7b) shall be on a square yard basis installed and complete as shown, specified and directed by the Engineer consisting of processed aggregate base material and bituminous concrete.

3. Any adjustments to the elevation of valve boxes, manholes frames and covers will not be measured for payment but the cost of such work shall be included in the appropriate item in the Bid Form.

4. Any adjustments to utility owned casings will not be measured but shall be included in the appropriate item in the Bid Form.

B. BASIS OF PAYMENT

1. Payment for temporary trench pavement (2-inch thick, class 2 bituminous concrete on top of 10-inch thick processed aggregate base) (Item No. 7a), complete in place and approved by the Engineer, shall be at the price bid in the Schedule of Prices. This price shall be full compensation for furnishing, hauling, placing, and compacting the bituminous concrete and processed aggregate base, installation of and maintenance of temporary repair, preparing and compacting subgrade and the surface of the gravel base, saw-cutting pavement, and all materials, tools, equipment and labor incidental thereto necessary to complete the restoration in accord with the Contract Drawings, the Specifications and the requirements of the Engineer there under. Also, included is removing and disposing of temporary paving material, furnishing and compacting base material, cutting back pavement edges, sealing edges with tack coat, and all other incidental materials or work, except as otherwise provide for.

2. Payment for permanent trench pavement (3-inch thick, class 1 bituminous concrete on top of 6-inch thick, class 4 bituminous concrete on top of 10-inch thick processed aggregate base) (Item No. 7b), complete in place and approved by the Engineer, shall be at the price bid in the Schedule of Prices. This price shall be full compensation for furnishing, hauling, placing, and compacting the bituminous concrete and processed aggregate base, removing and disposing of temporary paving material, saw-cutting pavement, installation of and maintenance of temporary repair, preparing and

compacting subgrade and the surface of the gravel base, and all materials, tools, equipment and labor incidental thereto necessary to complete the restoration in accord with the Contract Drawings, the Specifications and the requirements of the Engineer there under. Also, included is removing and disposing of temporary paving material, furnishing and compacting base material, cutting back pavement edges, sealing edges with tack coat, and all other incidental materials or work, except as otherwise provide for.

2.08 SURFACE RESTORATION (Item 8a through 8c)

A. METHOD OF MEASUREMENT

1. Measurement for loaming and seeding (Item 8a) shall be made on a square yards basis as measured in the field by the Engineer. The restoration measurement shall be the actual area as loamed and seeded to “lawn quality” restoration of any disturbed area.

2. Concrete sidewalk restoration (Item 8b), including removal of existing concrete sidewalks and replacement with new concrete sidewalks, shall be measured for payment on a square yard basis as determined in the field by the Engineer. The repair shall be the actual length and width of trench repaired, but in no case will payment be made for sidewalk repairs greater in width and length than listed in the trench and structure payline limits specified herein.

3.. Measurement for bituminous concrete driveway and bituminous concrete driveway ramp/apron restoration (Items 8c), including removal of existing bituminous concrete and replacement with new Class II bituminous concrete, shall be on a square yard basis as measured in the field by the Engineer. The repair shall be the actual length and width of trench repaired, or to the extents shown in the Drawings. Restoration shall be full width of concrete driveways and aprons. In no case will payment be made for driveway and driveway apron repairs greater in width and length than approved by the Engineer.

B. Payment

1. Payment for loaming and seeding (Items 8a) will be made for the quantity as determined above at the unit price in the Schedule of Prices. This price and payment shall be full compensation for all labor, equipment, and materials required for or incidental to the work.

2. Payment for concrete sidewalk restoration (Items 8b) shall be made for the quantity as determined above at the unit price in the Schedule of Prices. This price and payment shall be full compensation for excavation, removal and disposal of existing sidewalk; furnishing, placing, shaping and compacting processed traprock subbase, temporary pavement, removal of temporary repair, furnishing, forming, placing and shaping, finishing and curing concrete, including labor, materials, and all else incidental thereto for which payment is not provided under other items.

3. Payment for bituminous concrete driveway and bituminous concrete driveway tamp/apron restoration (Items 8c) shall be made for the quantity as determined above at the unit price in the Schedule of Prices. This price and payment shall be full compensation for excavation, removal and disposal of existing bituminous concrete driveways and aprons; furnishing, placing, shaping and compacting processed traprock subbase, temporary driveway and temporary driveway apron, removal of temporary repair, furnishing, forming, placing and shaping, and finishing bituminous concrete, including labor, materials, and all else incidental thereto for which payment is not provided under other items.

2.09 MISCELLANEOUS WORK (Items 9a through 9f)

A. Measurement

1. There will be no measurement for general requirements (Item 9a) as this work will be paid on a lump sum basis.

2. There will be no measurement for mobilization and demobilization (Item 9b) as this work will be paid on a lump sum basis.
3. Measurement for catch basin sedimentation control (Item 9c) shall be a count of the catch basins where sedimentation control measures are implemented as approved by the Engineer.

4. There will be no measurement for police detail (Item 9d) as this work will be paid based on approved police invoicing as specified in Section 01576.

5. There will be no measurement for certified flaggers (Item 9e) as this work will be paid based on approved invoicing as specified in Section 01576.

6. There will be no measurement for miscellaneous work and cleanup (Item 9f) as this work will be paid on a lump sum basis.

B. Payment

1. Payment for general requirements (Item 9a) will be made at the lump sum price bid in the Schedule of Prices. This price and payment, shall be full compensation for the Project Superintendent, Project Manager, Field Office Expense, Field Office Wages, Trailers/Field Office, Dumpsters, Bond, Security, Fencing, Utility Hookups, Equipment Maintenance, Temporary Utilities, Permits, Survey/Layout, Testing and Laboratory Analysis, Preconstruction Survey, As-Built Documents, general overhead expenses, Project Closeout Costs, all other temporary facilities as specified under Section 01500, soil stockpile staging area(s), and all labor, equipment, and materials required for or incidental to the work for which separate payment is not provided under other items. Payments will be made on a percent complete basis as determined by the Owner.

   a. The cost of Item 9a shall not exceed 7 percent of the Total Bid Price, excluding this item itself.

2. Payment for mobilization and demobilization (Item 9b) will be made at the lump sum price bid in the Schedule of Prices. This price and payment shall be full compensation for all costs associated with initiating and completing the Contract, exclusive of the cost of materials. Payment shall include compensation for all insurance, bonds, project signs, site preparation, and the general costs associated with establishing the work on site to assure that it is proceeding in a continuous manner.

   a. Payments shall be made in two equal installments. The first installment will occur at the time the first payment requisition is submitted after the Contractor has initiated full-time construction activity. The second installment will be paid when the Contractor has completed all construction activity including final cleanup and punch list items.

   b. The cost for Item 9b shall not exceed 5 percent of the Total Bid Price, excluding this item itself.

3. Payment for catch basin sedimentation control at each catch basin (Item 9c) will be made at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for installation and removal of the haybales and siltation fabric, including removal of sediment buildup, thorough cleaning of the catch basins and all labor, equipment, maintenance and materials required for or incidental to the work.

4. Payment for police detail (Item 9d) shall be based on approved invoices. Invoices for special assignments of police personnel will be directed to the

Owner for payment, with monthly progress payments. No mark-up on invoices will be made to the Contractor for this Work. The cost of the coordination and scheduling of the Police personnel shall be carried in the other items. Payment shall be made against the Allowance in accordance with Section 01030.

a. Charges related to the Contractor's failure to coordinate or schedule police will be made at the Contractor's sole expense.

5. Payment for certified flaggers (Item 9e) shall be based on approved invoices. Invoices for flagmen will be directed to the Owner for payment, with monthly progress payments. Contractor shall include a 5% markup for Contractor Coordination. Payment shall be made against the Allowance in accordance with Section 01030.

6. Payment for miscellaneous work and cleanup (Items 9f) will be at the lump sum price bid as listed in the Schedule of Prices. This price and payment, shall be full compensation for furnishing all labor, materials and equipment required to do all Work of this Contract as specified under Section 02905 and 02971, or as shown on the Drawings and any other miscellaneous Work not specifically included for payment under any other item, but necessary to complete the Contract. Partial payments shall be based on the breakdown of the items as specified in Section 02905 and 02971.

2.10 MAINTENANCE AND PROTECTION OF TRAFFIC (Items 10a through 10j)

A. Measurement

1. There will be no measurement for maintenance and protection of vehicular and pedestrian traffic (Item 10a) as this work will be paid on a lump sum basis.

2. Construction signs (Item 10b), encapsulated lens Type III reflective sheeting, will be measured for payment by the number of square feet of construction signs – Type III reflective sheeting delivered and used on the project.

3. 42" Traffic cones or traffic drums (Item 10c) will be measured for payment by the number of traffic cones or traffic drums used on the project.

4. Construction barricades (Item 10d) will be measured for payment by the number of barricades used on the project.

5. Temporary pavement markings (Items 10e through 10f), of the size and type noted in the Schedule of Prices, will be measured for payment by the number of linear feet of temporary pavement markings installed and accepted by the Owner.

6. Temporary pavement markings, symbols and legends (Items 10g), as noted in the Schedule of Prices, will be measured for payment by the number of square feet of temporary pavement markings, symbols and legends installed and accepted by the Owner.

7. There will be no measurement for construction fencing.

B. Payment

1. Payment for maintenance and protection of vehicular and pedestrian traffic (Item 10a) will be made for at the at the lump sum price bid in the Schedule of Prices.

   a. Periodic payments shall be on a percentage basis as determined by the estimated amount of the work completed during each estimate period during which work has progressed, relative to the whole of the work contemplated under this Section of the Specifications, up to ninety (90) percent of the total of the lump sum price bid, less retainage.

   b. The remaining ten (10) percent will be paid on the Final Estimate.

   c. Refer to Section 01570, Maintenance and Protection of Traffic, for additional information. There will be no separate payment for barricade warning lights, concrete barrier, steel plates, black out tape, the restoration of traffic signals and appurtenances, or other devices and appurtenances required for maintenance and protection of vehicular and pedestrian traffic. This work will also include the repair and maintenance of traffic signals and loop detectors that may be affected by construction. This work will also include all labor, equipment and materials incidental thereto.

   d. Refer to Section 01576 for Policing.

2. Payment for construction signs (Item 10b), encapsulated lens Type III reflective sheeting, will be made at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for all signs,

portable sign supports, metal sign posts and all hardware required. Each sign and support will be paid for once, regardless of the number of times it is used. Payment for signs that require replacement will be made at no additional cost to the Owner.

3. Payment for 42” traffic cones and traffic drums (Item 10c) will be made at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for each traffic cone or traffic drum used on the project. Each cone or drum will be paid for once, regardless of the number of times it is used on the project. Any traffic cones that are missing, damaged or defaced so they are not effective as determined by the Owner will be replaced by the Contractor at no cost to the Owner.

4. Payment for construction barricades (Item 10d) will be made at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for each barricade used on the project. Each barricade will be paid for once, regardless of the number of times it is used on the project.

5. Payment for temporary pavement markings (Items 10e and 10f), of the size and type noted, will be made at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for all pre-marking layout, cleaning off of pavement, glass beads, protection during drying and all materials, equipment, tools and labor incidental thereto. Payment will not be made for temporary pavement markings affected by Contractor error and ordered removed.

6. Temporary pavement markings, symbols and legends (Items 10g) will be made at the unit price bid in the Schedule of Prices. This price and payment shall be full compensation for all pre-marking layout, cleaning off of pavement, glass beads, protection during drying and all materials, equipment, tools and labor incidental thereto. Payment will not be made for pavement markings affected by Contractor error and ordered removed.

7. Payment for construction fencing shall be paid for under Items 10a.

END OF SECTION

THE METROPOLITAN DISTRICT

SECTION 01030

ALLOWANCES

PART 1 - GENERAL

1.01 SCOPE

A. This Section includes administrative and procedural requirements governing the following types of allowances:

1. Contingency allowances.

a. Contingency allowances are stipulated amounts available as a reserve for sole use by Owner to cover certain Work within the project, as indicated in the Schedule of Prices.

PART 2 - PRODUCTS (NOT USED)

PART 3- EXECUTION

3.01 SCHEDULE OF ALLOWANCES

A. Contingency Allowances:

1. A contingency allowance of $32,000 to cover costs associated with Police Detail (Item 9d). See Section 01576, Policing for additional information. Contractor shall provide proof of payment to Police Departments along with monthly Payment requests, as required in Section 01025. No mark-up on payments to the Town Police Departments shall be allowed.

2. A contingency allowance of $9,000 to cover costs associated with the use of Certified Flaggers (Item 9e). See Section 01576, Policing for additional information. Contractor shall submit invoicing associated with Certified Flaggers in accordance with Section 01576.

END OF SECTION

SECTION 01035

MODIFICATION PROCEDURES

PART 1 – GENERAL

1.01 CHANGE ORDER PROCEDURES

In general, Change Orders will be issued for correction of Contract documents which will eliminate errors, omissions or discrepancies in the work; for incorporating changes in Owner requirements, including additions or deletions in the work; for unforeseen field conditions which necessitate changes in the work; changes in code provisions or other requirements of Federal, State and local authority requiring changes in the work; changes in the availability of products or for incorporating new products into the work and for changes directed by the Engineer for the benefit of the Owner.

Authority to execute Change Orders shall be that of the Owner and not of the Contractor. Change Orders will, in general, originate by a "Change Order Proposal Request" or by issuance of a “Work Change Directive” by the Owner.

Unless authorized by the Engineer, no work shall be performed that is involved in the change until a formal Change Order is issued.

To initiate a Change Order, the Engineer will forward a Change Order proposal request describing the proposed changes and if required, include additional or revised drawings and specifications soliciting a formal quotation of cost and time to incorporate and complete the proposed Change Order work. The Contractor must respond to this request with a written proposal furnishing details of his proposed cost of the work including labor, equipment, materials and subcontractor’s cost. These costs must be submitted in a format that is acceptable to the Owner. The guidelines for contractor markups, if any, can be found in Article 12 of the General Conditions. At the beginning of the project the contractor will submit a schedule of rates for labor & equipment that he expects to use on the project. Upon reaching mutual agreement on the cost and time, the Engineer will sign his approval of the Change Order and submit it to the Contractor for his full signature of acceptance. Article 10 of the General Conditions outlines the sequence of steps to be used in finalizing the cost of the changed work.

The Engineer may, to avoid costly removal of or alterations to present on-going work, issue a Work Change Directive (WCD) authorizing the Contractor to proceed, subject to later negotiation of the price of the change.

Change Order format, submission guidelines, documentation and other administrative requirements shall be in accord with the MDC Change Order Manual in use at the time the

work is performed. If there is no manual in current use then standard MDC procedures shall be followed.

1.02 PRICE AGREEMENTS

Prices agreed upon to cover the Change Orders may be either by mutual acceptance of a lump sum price, by unit prices as stated in the Contract bid form, by new negotiated unit prices or actual direct cost plus the percentages of the various proposed cost types as found in Article 12 of the General Conditions for overhead, profit, and other expenses consistent with Article 11 of the General Conditions.

Method for computing the cost of the change shall be based on the net additional increase. No overhead and profit shall be deducted from prices for changes deleting work.

The Change Order form document shall indicate the net adjustment (+/-) to the total Contract price as a result thereof including extension or reduction of time when applicable.

1.03 BOND REQUIREMENTS

Performance, Payment, Labor, Material and Other Bonds required by the contract shall be extended to and include all Change Orders and Modifications to the contract. Additional bonding costs associated with Change Orders and Modifications are to be included with the costs submitted for changes and are assumed to be included if not specifically itemized as part of the change.

The Contractor shall notify the bonding company upon issuance of every Change Order and Modification.

In addition, the Contractor must furnish a Consent of Surety to the Owner at each $250,000 increase to the contract value as the cumulative result of the change orders. A copy of the Consent of Surety acknowledging the increase in coverage must be provided to the Owner prior to the execution of any change order which exceeds each cumulative $250,000 threshold.

Overhead and profit is not allowed on bond costs.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

SECTION 01040

COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Project Management

2. Coordination

B. Related Sections

1. Section 01014 Special Work Sequences and Suggested Sequence of Construction.

C. Related Work Not Included

1. Operation of existing facilities will be performed by the Owner unless otherwise specified. The Owner will assist in arranging operation of any existing facilities or equipment required by the Contractor to connect to existing facilities, and the Contractor shall not operate existing valves or equipment. Only the Owner will operate Owner valves.

1.02 SUBMITTALS

At a minimum the Contractor shall implement the following:

A. Incorporate the requirements of this Section, as well as Work which may impact the existing system operation, or the operations of any adjacent utility, in the project schedule submitted under Section 01310.

B. Submit to the affected utility company, the Owner, and the Engineer, in writing, all requests for temporary shutdowns of facilities or interruption of operations. No utility system shutdowns or interruptions to existing operations will be permitted except as outlined in this Section. Submit requests at least 2 weeks prior to the beginning of the Work requiring shutdown or interruption. No shutdown shall occur without the approval of the utility company and the Owner.

C. At the pre-construction conference, supply to the Owner the office telephone/cell number of a responsible person who may be contacted during off-hours for emergencies 24 hours a day, seven days a week.

D. Prepare a list of phone numbers for all Project personnel and submit to the Engineer at the pre-construction conference. Include Contractor, Owner, Engineer, Town/City or State personnel including police, fire, and ambulance.

1.03 PROJECT MANAGEMENT

A. The Contractor shall retain a full-time Superintendent, satisfactory to the Owner and Engineer. The Superintendent shall not be changed except with the consent of the Owner and Engineer. The Superintendent shall be in full charge of the Work. At the request of the Engineer, the Contractor shall submit a resume to verify the qualifications of the superintendent.

B. The Contractor shall also employ a competent and qualified full time resident Project Manager for the Project (in addition to a full time resident Superintendent) who shall be dedicated to the project full time and who shall be acceptable to the Owner. Contractor shall submit Project Manager qualifications for review and approval of the Owner both prior to proceeding with the work and also for any proposed replacement Project Manager during the progress of the work. The Project Manager shall represent the Contractor and any communications given to the Project Manager shall be binding as if given to the Contractor. The Project Manager will be assigned to and located at the Project site during and for the duration of the Work.

C. The Contractor shall complete the Work in a continuous uninterrupted operation. Use sufficient personnel and adequate equipment to complete the Work within the Contract Time.

1.04 COORDINATION

A. Do not interfere with the operation of the existing utilities, unless otherwise approved by the Owner.

B. Perform all coordination necessary to complete connections to the existing pipelines.

C. Coordinate with appropriate utility companies, as well as with the Owner, where the Work crosses or is adjacent to existing utilities.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 GENERAL

A. Notify Call Before You Dig at 1-800-922-4455 at least 72 hours prior to any digging, trenching, rock removal, demolition, borings, grading, landscaping, or

any other earth moving operations.

B. Furnish all labor, materials, tools and equipment necessary to provide temporary light, ventilation, safety personnel and equipment, gas monitoring equipment, supports and braces necessary to perform the work in a safe and secure manner. Observe all safety regulations.

3.02 COORDINATION WITH THE OWNER'S OPERATIONS

A. Notify the Owner and Engineer, in writing, a minimum of 5 working days in advance of commencing Work on site.

B. Notify the Owner and Engineer, in writing, a minimum of 5 working days before commencing any work which may affect the Owner's operations.

C. Perform all construction activities so as to avoid interference with operations of the existing utility systems and the work of others.

D. Coordinate the following operations with the Owner and the Engineer:

1. Operation of existing valves. The opening and closing of existing valves will be performed by the Owner.

2. Testing of the new mains.

3. Timing and duration of activities that impact existing utilities.

E. The Owner has the authority to order the Work stopped or prohibited which could unreasonably result in stopping the necessary functions of the existing utilities. Any costs delays associated with these work stoppages due to the Contractor's operation shall be borne the Contractor.

3.03 SEQUENCE OF CONSTRUCTION

A. Constructing the proposed improvements while maintaining existing operations will require a specific sequence of construction. Refer to Section 01014 for a suggested sequence of construction. The Contractor will be allowed as much flexibility as possible in scheduling the construction activities. Provide a detailed construction schedule as required in Section 01310.

B. Insofar as possible, all new constructed public sewers, drains and water mains shall be tested by the Contractor and in operating condition before the final tie-ins are made to connect new pipe to existing pipe.

3.04 TEMPORARY CONSTRUCTION ACTIVITIES

A. The Contractor shall be responsible for providing and maintaining all temporary

facilities, including bypass pumping facilities, sewer/drain collection and service systems, and temporary water mains and water services required to complete the work of this Contract.

B. The Contractor shall submit for approval by the Owner and the Engineer detailed information including calculations, shop drawings, catalog cuts for all proposed temporary facilities and temporary pipelines and services.

C. All temporary work shall be removed by the Contractor following the construction of the permanent work.

3.05 SHUTDOWNS

A. Rescheduling or reactivation of any temporary shutdowns may be required if an emergency occurs in the utility system.

END OF SECTION

SECTION 01044

PROGRESS

PART 1 - GENERAL

1 .01 COMMENCEMENT OF WORK - COMPLETION OF WORK

A. See Contract Document Section 00300 - Bid Form for Commencement and Completion of Work.

1.02 TIME AND ORDER OF WORKING

A. The award and the timing of the award of this Contract after the opening of bids will be subject to review by the State of Connecticut Department of Energy and Environmental Protection and or Department of Health and the Owner.

B. In order that the Work may be conducted with a minimum of inconvenience to the public, and that the work on this Contract may be coordinated with other work which may be under construction or contemplated, and, Work under the Contract may conform to conditions under which it has been undertaken or conditions attached to the rights-of-way for this work, the Engineer or Owner may determine the point or points and times portions of the Work will be commenced or carried on and may issue orders pertaining thereto and relative to the rate of progress on the several portions of the work.

C. In the event the Contractor has reason to think there has been a delay or may be a delay by any act or omission of the Owner or any of its agents, or by any other cause beyond the control of the Contractor that could not have been anticipated by the Contractor, the Contractor shall give notice thereof, in writing, to the Engineer as provided elsewhere herein and in the Contract Agreement.

D. In any one street, or other reasonable section of the job, as may be determined by the Engineer, the main pipeline and appurtenances shall be completed, leakage-tested, inspected, cleaned and defects corrected where necessary, ready to use, and the compaction, paving repair and cleanup work shall be done before work is started on any other street or section.

E. Due to potential construction activities in the vicinity of this Contract, the Contractor shall coordinate the dates of milling and overlaying with the Engineer, Owner and the City, Town or State DOT. Milling and overlaying will not be permitted without the written permission of the Owner and the City/Town/State DOT where the work is taking place.

F. The sequence of performing the Work shall be compatible with the Traffic Control Plan as outlined in Section 01570.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

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SECTION 01045

CUTTING, CORING AND PATCHING

PART 1 - GENERAL

1 .01 SCOPE OF WORK:

A. This Section covers the cutting, coring, rough and finish patching of holes and openings in existing and new construction.

B. All cutting, coring, and rough patching shall be performed by the Contractor. Finish patching shall be the responsibility of the Contractor and shall be constructed by the trade associated with the application of the particular finish.

1.02 RELATED WORK.

A. Section 03100 Concrete

B. Section 03200 Concrete Reinforcement

C. Section 03740 Modifications to Existing Concrete

1.03 QUALITY ASSURANCE

A. Provide in accordance with Section 01450.

B. Adhere strictly to the manufacturer's current printed recommendations regarding temperature at time of application for all work involving epoxy, cement base coating and protective coating.

C. Use only products of the specified Repair Mortar System or equal.

D. Any changes in the specified repair mortar work or methods shall be allowed only with the approval of the Engineer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Concrete repair mortar shall be a non-shrink, commercial formulation requiring only the addition of water with minimum 28-day compressive strength of 5,000 psi.

B. Provide a non-shrink cementitious repair mortar material as manufactured by:

a. Sika Repair 224 manufactured by Sika Corp.,
b. EMACO S88CI manufactured by Master Builder, Inc.
c. Underlayment F-120 by Sauereisen,
d. Or equal.

C. Materials for finish patching shall be equal to those of adjacent construction.

PART 3 - EXECUTION

3.01 GENERAL

A. All cutting and coring shall be performed in such a manner as to limit the extent of patching.

B. All holes cut through concrete and masonry walls, slabs or arches shall be core drilled unless otherwise approved. No structural members shall be cut without approval of the Structural Engineer of Record and all such cutting shall be done in a manner directed by him. No holes may be drilled in beams or other structural members. All work shall be performed by mechanics skilled in this type of work.

C. Rough patching shall be as to bring the cut or cored area flush with existing construction unless otherwise shown. Finish patching shall match existing surfaces as approved.

3.02 CUTTING

A. Cutting shall be performed with a concrete saw and diamond saw blades of proper size.

B. Corners of square or rectangular openings shall be cored. Do not overcut corners of openings. Corners shall be chipped out square, if required, so as not to cause cracking at the corners.

C. Provide for control of slurry generated by sawing operation on both sides of element.

D. When cutting reinforced concrete, the cutting shall be done so as not to damage the bond between the concrete and reinforcing steel in the structure. The cut shall be made so that steel neither protrudes nor is recessed from the face of the cut.

E. Adequate bracing or shoring of the area to be cut shall be installed prior to the start of cutting. Check area during sawing operations for cracking and provide additional bracing as required to prevent a partial release of cut area during sawing operations.

F. Provide equipment of adequate size to remove cut panel.

3.03 CORING

A. Coring shall be performed with an approved non-impact rotary tool with diamond core drills. Size of holes shall be suitable for pipe, conduit, sleeve, equipment or mechanical seals to be installed.

B. Provide protection for existing equipment, utilities and critical areas against water or other damage caused by drilling operation.

C. Slurry or tailings resulting from coring operations shall be removed from the area following drilling.

3.04 PATCHING

A. Prepare surfaces to receive cementitious repair mortar in accordance with manufacturer's instructions.

B. Mix the cementitious repair mortar material components in accordance with the manufacturer's instructions. Concrete surfaces should be surface saturated dry (SSD) with no standing water prior to mortar application.

C. Work a wet scrub coat of the mortar per the manufacturer's recommendations into the pores and voids in the substrate and over the substrate prior to mortar application by trowel.

D. Apply the cementitious repair mortar using a steel trowel to work the material into the surface. Fill voids from deepest to shallowest areas as the application work proceeds. Strictly follow the manufacturer’s application requirements.

E. Once the repaired areas are filled with repair mortar, strike off the mortar level with the surrounding concrete substrate. Do not leave a broom finish. Finish with a steel trowel until closed up at the surface and flat.

F. Cure the repair mortar in strict accordance with the manufacturer's instructions.

END OF SECTION

STATE OF CONNECTICUT

CROSS CONNECTION CONTROL MANUAL

Prepared by:

The State of Connecticut
Department of Public Health
Drinking Water Division
410 Capitol Avenue, MS #51 WAT
P.O. Box 340308
Hartford, Connecticut 06134-0308

and
Connecticut Section – American Water Works Association,
Cross Connection Control Committee

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Table of Contents

3 REGULATIONS OF CONNECTICUT STATE AGENCIES

SECTION 19-13-B37. Cross Connections Between Water Supplies Prohibited

No physical connection between the distribution system of a public water system and that of any other water supply shall be permitted, unless such other water supply is of safe sanitary quality and the interconnection of both supplies is approved by the State Department of Public Health. No officer, board, corporation or other person or group of persons, owning, managing or controlling any public water system, shall provide new water service to a site where any person, firm or corporation either maintains such connection or is not in compliance with section 19-13-B38a of the Regulations of Connecticut State Agencies at this location. Upon written order by the local health department or the Department of Public Health, an officer, board, corporation or other person or group of persons, owning, managing or controlling any public water system, shall terminate existing water service to a site where any person, firm or corporation either maintains such connection or is not in compliance with section 19-13-B38a of the Regulations of Connecticut State Agencies at this location.

SECTION 19-13-B38a. Permissible Arrangements for Connections to Public Water Supply Lines

(a) **Definitions.** As used in this section:

(1) "Air gap" means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or outlet supplying water to a tank plumbing fixture, or other device, and the flood level rim of the receptacle. The vertical physical separation shall be at least two times the inside diameter of the water inlet pipe above the flood rim level but shall not be less than one inch;

(2) "Air vent type backflow preventer" means a device containing two independently operating check valves separated by a chamber which can automatically vent to the atmosphere if backflow occurs;

(3) "Atmospheric vacuum breaker" means a mechanical device which automatically air vents a pipeline to prevent backsiphonage;

(4) "Double check valve assembly" (DCVA) means a device which contains two independently acting check valves located between two tightly closing shut-off valves and fitted with properly located test cocks;

(5) "Fire sprinkler system" for fire protection purposes means an integrated system of underground and overhead piping designed to provide fire protection for a building or structure. The installation includes one or more automatic water supplies. The portion of the sprinkler system above-ground is a network of specially sized or hydraulically designed piping installed in a building, structure, or area generally overhead, and to which sprinklers are attached in a systematic pattern. The valve controlling each system riser is located in the sprinkler riser or its supply piping. Each sprinkler system riser includes a device for actuating an alarm when the system is in operation. The system is usually activated by heat from a fire and discharges water over the fire area;

(6) "Hose bibb vacuum breaker" means an atmospheric vacuum breaker designed to be attached to an outlet having a hose connection thread;

(7) "Owner" means the customer of a public water system;

(8) "Pressure vacuum breaker" means a device which contains a spring loaded check valve and a spring loaded atmospheric vent which opens when the pressure approaches atmospheric. The unit shall include two tightly closing shut-off valves located at each end of the device and two test cocks properly located for testing the device;

(9) "Reduced pressure principle backflow preventer" (RPD) means a device containing within its structure a minimum of two independently acting, approved check valves, together with an automatically operating pressure differential relief valve located between the two check valves. The first check valve reduces the system pressure a predetermined amount so that during normal flow and a cessation of normal flow the pressure between the checks shall be less than the system pressure. In case of leakage of either check valve, the differential relief valve, by discharging to atmosphere, shall operate to maintain the pressure between the checks less than the system pressure. The unit shall include tightly closing shut-off valves located at each end of the device and each device shall be fitted with properly located test cocks;

(10) "Siamese connection" means an inlet equipped with one or more couplings to which a fire hose can be attached and through which water can be delivered by a fire department pumper to a sprinkler system; and

(11) "Toxic or objectionable substance" means any compound, which could affect the public health, the potability, or the aesthetic quality of the water.

(b) **Air Gap.** An air gap is required between all potable water lines and equipment or systems, which may be subject to contamination.

(c) **Reduced pressure principle backflow preventer.**

(1) A reduced pressure principle backflow preventer (RPD) is required on a line to all facilities where toxic or objectionable substances are used in addition to the required air gap, vacuum breaker or RPD on individual pieces of equipment unless the public water system has determined that an RPD is not necessary. Where such substances are used in a specific area, an RPD on the line to that area may be used in place of the RPD on the line to the facility.

(2) The owner shall install a reduced pressure principle backflow preventer (RPD) or an air gap in the following instances:

(A) On a line to fire sprinkler systems (including tanks) where chemicals are added or to foam fire fighting systems;
(B) On a line to pressurized water systems on ships;
(C) On a line used to supply car wash facilities where pressure is boosted;
(D) On a line to irrigation or lawn sprinkler systems where chemicals are added;
(E) On a line to all boiler systems where chemicals are added;
(F) On a line to heat exchangers where chemicals are added;
(G) On a line to solar heating systems where chemicals are added;
(H) On a line to plating tanks or areas. No potable water use will be allowed downstream of the device pursuant to section 19-13-B38a(e)(2) of the Regulations of Connecticut State Agencies.

(3) Unless otherwise required by sections 19-13-B38a(b) or 19-13-B38a(c) of the Regulations of Connecticut State Agencies, the owner shall install either an RPD or an air vent type backflow preventer or an air gap in the following instances:

(A) Water supply lines to all boiler systems where chemicals are not added;
(B) Water supply lines to carbonators for beverage machines, water conditioning systems, and commercial ice making equipment;
(C) Water supply lines connected to solar heating systems where chemicals are not added and heat exchangers where chemicals are not added;
(D) Water supply lines to storage tanks used for fire protection where chemicals are not added.

(d) **Double Check Valve Assembly.** The owner shall install a double check valve assembly (DCVA) on public water supply lines to fire sprinkler systems with siamese connections unless chemicals are added to the fire sprinkler system. Where chemicals are added to such systems, the owner shall install an RPD pursuant to section 19-13-B38a(c)(2)(A) of the Regulations of Connecticut State Agencies. An owner may install an RPD instead of a DCVA on public water supply lines to fire sprinkler systems with siamese connections.

(e) **Vacuum breaker.** The owner shall install either an atmospheric vacuum breaker or a pressure vacuum breaker or an air gap in the following instances:

(1) Irrigation or lawn sprinkler systems where chemicals are not added;
(2) Flush valve toilets;
(3) Inlets which are or may become submerged, except where an RPD is required pursuant to section 19-13-B38a(c)(2) of the Regulations of Connecticut State Agencies;
(4) Hemodialysis units;
(5) At marinas and docks on all hose bibbs or other outlets to which a hose may be connected.

(f) **Installation and maintenance.** The devices required by section 19-13-B38a of the Regulations of Connecticut State Agencies shall be purchased, owned, installed, and maintained by the owner in compliance with the following conditions:

(1) New devices shall conform to the revision of American Water Works Association Standard C510, C511 or the revision of the applicable standard of the American Society of Sanitary Engineering in effect at the time of building permit application.

(2) There shall be no connection made for potable water use downstream of an RPD and upstream of the equipment or systems subject to contamination except where the device is installed on the service line and the required air gap, vacuum breaker, or RPD is provided on all individual pieces of equipment.

(3) Each RPD, DCVA and pressure vacuum breaker shall be located in a room or structure that is well lighted, properly drained, and not subject to flooding. These devices shall be easily accessible for repair, testing and inspection.

(4) There shall not be any bypass around a device without appropriate protection as required by section 19-13-B38a of the Regulations of Connecticut State Agencies.

(5) If an RPD or DCVA cannot be removed from service for maintenance and testing during normal working hours, then a second device of the same type shall be installed in parallel so as to permit inspection and repair of either unit.

(6) The owner shall notify the public water system prior to the installation of any RPD, DCVA or pressure vacuum breaker required by section 19-13-B38a of the Regulations of Connecticut State Agencies. Immediately after installation of such devices, the owner shall arrange for the public water system to have each device tested by a person who has met the requirements of section 25-32-11(e) of the Regulations of Connecticut State Agencies.

(7) The public water system shall have each RPD, DCVA and pressure vacuum breaker tested annually and shall maintain records of the test. Any malfunctioning device shall be promptly restored to proper operating condition by the owner. A summary of the results shall be forwarded to the Department of Public Health as a part of the annual cross connection survey report. All tests must be performed by a person who has met the requirements of section 25-32-11(e) of the Regulations of Connecticut State Agencies.

(8) Atmospheric vacuum breakers shall be located beyond the last control valve prior to the first outlet. All vacuum breakers shall be installed at an elevation higher than any outlet according to manufacturer's instructions.

(9) An atmospheric vacuum breaker shall be installed so that it is not subject to backpressure or continuous operating pressure of more than twelve (12) hours duration. Where vacuum breakers are to be installed under section 19-13-B38a(d) of the Regulations of Connecticut State Agencies and a continuous operating pressure exists, a pressure vacuum breaker shall be used.

(10) An atmospheric vacuum breaker shall be installed in such a fashion that it will not be subject to corrosion, which will render it inoperative.

(11) The owner is responsible for complying with all building, plumbing, fire safety or other applicable codes, regulations or requirements.

(g) **Civil Penalties.**

(1) Notice of violation. When the commissioner determines that a violation of section 19-13- B38a(d) of the Regulations of Connecticut State Agencies has occurred or is occurring, the commissioner may so notify the violator and may impose a civil penalty in accordance with this subsection if compliance is not achieved by the date specified in the notice of violation.

(2) Appeals. Within twenty days (20) after such notice is sent by the commissioner, an owner in receipt of a notice of violation issued pursuant to this subsection may petition the commissioner in writing, by U.S. mail, certified or registered, postage prepaid, return receipt requested, for an opportunity to contest the determination that a violation occurred, the determination a violation has not been corrected, the initial date of the imposition of the penalty, and the imposition of a penalty.

(3) Penalty. Failure to install a device required pursuant to Section 19-13-B38a(d) of the Regulations of Connecticut State Agencies shall result in a penalty of not more than $2,000.

SECTION 19-13-B39. Quality of Water Supplies Made Available for Public and For Employees.

No water supply shall be used or rendered available for drinking and for other personal or domestic purposes in any industrial plan, mercantile establishment, hotel, lodging or boarding house, tenement house, hospital, theatre, park or public building, or on any outdoor or construction work, unless such supply is of safe sanitary quality approved by the state department of health. If a water supply for industrial or fire protection purposes is obtained entirely or in part from a source not approved for drinking purposes, this supply shall be distributed through an independent piping system having no connection with the systems for drinking and for other domestic use.

SECTION 19-13-B45. Minimum Requirements for Drainage and Toilet Systems.

(a) Plumbing and drainage systems shall be so constructed as to avoid contamination of safe drinking water supplies in houses or buildings. There shall be no cross connections between such safe water supplies and unsafe water supplies nor shall such safe supplies be piped to refrigeration, air conditioning or other mechanical equipment provided with direct connections to drains or constructed in such a manner as to permit contaminated water to be siphoned or drawn into the water supply pipes. Storage of drinking water in buildings shall be only in covered tanks so constructed as to avoid any possible contamination of the water in the tanks. Sewer or waste lines located above storage tanks and direct overflows and drains to sewer systems are expressly prohibited.

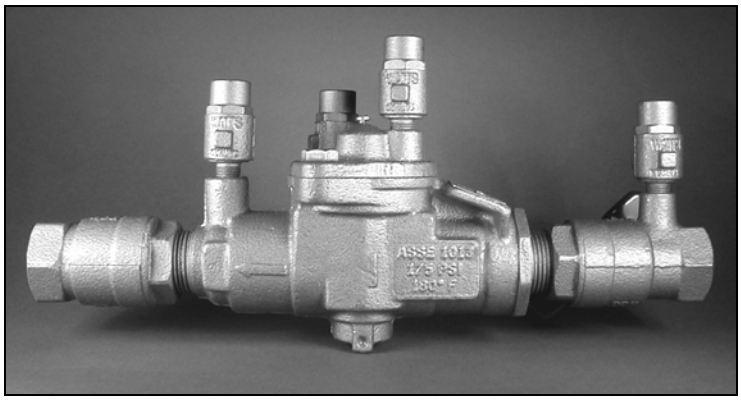
As stated in the preliminary introduction to the detailed test procedure, this test procedure does not require the closure of the upstream gate valve by so doing, we do not introduce debris into the check valve assemblies.

4.9.6.2 TROUBLESHOOTING

Double Check Valve Assembly Trouble Shooting Guide

SYMPTOM	CAUSE	SOLUTION
Check valve fails to hold 1 PSID	a. Shut off valve not closed completely	a. Close # 2 shut off valve or inspect for possible though leakage
	b. Check valve fouled with debris	b. Inspect and clean seat disc and seat
	c. Check poppet stem not moving freely in guide	c. Inspect for debris or deposits on poppet stem or guide

4.10 REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTERS



4.10.1 INTRODUCTION

Also called RPD or RPZ (zone). These devices are the best mechanical protection made and are used for high hazard applications.

Reduced pressure devices consist of two independently operating spring loaded check valves with a relief port assembly between the two checks, adding up to three securities. If both checks fail the relief port would be the third protection against backflow.

The high reliance factor simply derives from the fact that as these devices are tested once every year it is highly unlikely that all three securities will fail within that time period.

4.10.2 A.S.S.E. AND/OR AWWA STANDARD

A.S.S.E. Standard No. 1013 – Performance Requirements for Reduced Pressure Principle Backflow Preventers.

AWWA C511 – AWWA Standard for Reduced-Pressure Principle Backflow-Prevention Assembly.

SECTION 01046

CONTROL OF WORK

PART 1 - GENERAL

1.01 PERSONNEL AND EQUIPMENT

A. The Contractor shall furnish personnel and equipment which will be appropriate to execute a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the Contract Time. If at any time such personnel and equipment appears to be inefficient, inappropriate or insufficient to accomplish the quality of work required or for producing the rate of progress aforesaid, the Engineer may order the Contractor to increase the efficiency, change the character or increase the personnel and/or equipment and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

1.02 PRIVATE LAND

A. The Contractor shall not enter or occupy private land outside of easements, except by permission of the land owner. Permission of the land owner shall be in writing with a copy to the Engineer.

1.03 PIPE LOCATIONS

A. The Contractor shall locate pipelines substantially as indicated on the Drawings. The Engineer reserves the right to make modifications to the locations as may be found desirable to avoid interference with existing structures or for any other reasons. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

1.04 OPEN EXCAVATIONS

A. The Contractor shall adequately safeguard all open excavations by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. Provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Remove bridges provided for access during construction when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street and requiring that the trench shall not remain open overnight.

B. Take precautions to prevent injury to the public due to open trenches. Provide barricades, railings, fencing, signs and any other necessary items to restrict the public from any open trenches. Provide adequate light at all trenches, excavated material, equipment, or other obstacles which could be dangerous to the public at night.

1.05 TEST PITS

A. The Contractor shall excavate test pits to locate underground pipelines or structures in advance of the construction. Backfill test pits immediately after their purpose has been satisfied and restore and maintain the surface.

1.06 MAINTENANCE OF TRAFFIC

A. Unless permission to close a street is received in writing from the proper authority, the Contractor shall remove all excavated material so that vehicular and pedestrian traffic may be maintained at all times. Stockpiling in the street of excavated materials, new gravel material and all materials to be installed (pipes, manholes, castings, structures, etc) is not permitted. If the construction operations cause traffic hazards, repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the Engineer.

B. Detours around construction will be subject to the review and approval of local traffic authority, the Owner and the Engineer. Where detours are permitted, the Contractor shall provide all necessary barricades and signs as required to divert the flow of traffic and expedite construction operations while traffic is detoured. Periods when traffic is being detoured will be strictly controlled by the Owner.

C. The Contractor shall take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. The Contractor shall be fully responsible for damage or injuries whether or not police protection has been provided.

1.07 CARE AND PROTECTION OF PROPERTY

A. The Contractor shall be responsible for the preservation of all public and private property and use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, the Contractor shall restore such property to a condition similar or equal to that existing before the damage was done, or make good the damage in other manner acceptable to the Engineer.

1.08 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains and electric and telephone cables, whether or not they are shown on the Drawings. Carefully support and protect all such structures and utilities from injury of any kind. Immediately repair any damage resulting from the construction operations.

B. The Contractor shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines and sewers). Maintain services to buildings and pay costs or charges resulting from damage thereto.

C. The Contractor shall notify all utility companies in writing at least 72 hours (excluding Saturdays, Sundays and Legal holidays) before excavating in any public way. Also notify Call Before You Dig, telephone 1-800-922-4455 at least 72 hours prior to start of work.

D. If, in the opinion of the Engineer, permanent relocation of a privately owned utility is required, the Engineer will notify the Utility to perform the work as expeditiously as possible. Cooperate with the Utility. No claim for delay will be allowed due to such relocation.

E. The Contractor shall coordinate the removal and replacement of traffic loops and signals, if required for the performance of the work, at no additional cost to the Owner.

1.09 WATER FOR CONSTRUCTION PURPOSES

A. In locations where public water supply is available, the Contractor may be allowed to use water for construction purposes.

B. Refer to Section 01060 Regulatory Requirements for administrative procedures, application requirements and fees associated with water usage.

C. The express approval of the Owner shall be obtained before water is used. Waste of water shall be sufficient cause for withdrawing the privilege. Hydrants shall only be operated under the supervision of the Owner's personnel.

1.10 MAINTENANCE OF FLOW

A. The Contractor shall provide for the flow of sewers, drains and water courses interrupted during the progress of the work, and immediately cart away and remove all offensive matter. The Contractor shall submit for review and approval the entire procedure of maintaining existing flow with the Engineer well in advance of the interruption of any flow.

B. The Contractor shall provide continuous water services during the progress of the work.

1.11 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

A. During the course of the work, the Contractor shall keep the site of operations as clean and neat as possible. Dispose of all residue resulting from the construction work and, at the conclusion of the work, remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures and any other refuse remaining from the construction operations and leave the entire site of the work in a neat and orderly condition.

B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor shall comply with all applicable Federal, State and local laws and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and in other related Sections.

C. Disposal of excess excavated material in wetlands, stream corridors and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person employed by him will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. The Contractor will be required to remove the fill and restore the area impacted at no increase in the Contract Price.

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Owner will initially layout the Work and establish lines and grades for the Project.

B. The Contractor shall be responsible for establishing elevations, lines, levels, reference marks, batter boards, etc. Contractor shall be responsible for staking easements.

C. The Contractor shall locate and protect survey control and reference points provided by the Owner.

D. Additional control established by the Contractor within the project area shall be protected from disturbance.

E. Control datum for this project shall be the North American Vertical Datum of 1988 (NAVD 88).

1.02 LINES, GRADES AND MEASUREMENTS

A. The Contractor shall employ a Land Surveyor, licensed in the State of Connecticut, to provide field engineering services. The Land Surveyor shall utilize recognized survey practices to establish elevations, lines, levels, reference marks, etc., needed by the Contractor during the progress of the Work, and to occasionally verify such marks.

B. The Contractor shall submit a certificate signed by the Land Surveyor registered in the State of Connecticut verifying that the elevations and locations of the Work are in conformance with the Contract Documents.

C. The Engineer and the Owner shall be permitted at all times to check the lines, elevations, reference marks, etc., set by the Contractor, who shall correct any errors in lines, elevations, reference marks, etc., disclosed by such check. Such a check shall not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire Work.

D. The Contractor shall make, check, and be responsible for all measurements and dimensions necessary for the proper construction of and the prevention of misfittings in the Work.

E. The Contractor shall establish and provide layout stakes and/or reference marks at a minimum of 50 foot intervals along each section of Work. Layout stakes shall be offset 2-feet off the curb line or at a greater distance required to assure that offsets are protected from being disturbed during construction. In addition, two (2) offset stakes shall be set at each structure. Layout shall be in accordance with MDC Cut Sheet and MDC Sewer Stakeout Policy and the MDC Water Layout Policy as attached at the end of this section..

F. The Contractor shall establish bench marks at a minimum separation of 300 feet along the proposed work area.

G. The Contractor shall provide personnel to assist the Inspector with acquiring all measurements including lines, grades, etc. to ensure work conforms to MDC Specifications and to verify the quantities measured for payment.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

MDC Cut Sheet and MDC Sewer Stakeout Policy

Stationing of Manholes

1. Start station 0+00 at existing manhole or first new manhole (if new MH is to be constructed over existing sewer).

2. Station consecutively along the main portion of the sewer to the next manhole.

3. The first stake out of proposed manholes shall be utilized to adjust the stationing to the next even 50' interval when the manhole station is not evenly divisible by 50'. Example Attached:
   The first stake from SMH 11+31 N shall be at Sta. 11+50.

4. At intersection(s) where the sewer branches off in another direction, a different station shall be used other than the one that has already been used. The new stationing shall begin with the next even thousand station. Thus, it is possible to have more than one station per manhole. Example Attached: SMH 1+22 NW and SMH 10+100 NE are the same manhole.

5. All stakes shall be offset a distance away from the proposed work to insure that they will remain following construction.

6. Two offset stakes shall be placed at each manhole.

7. Street stationing of the sewer will NOT be allowed.

MDC

The Metropolitan District

CUT SHEET

SEWER ☐
WATER ☐

LOCATION: _____

TOWN: _____ CONTRACT _____

STAKED: _____ of CL at _____

ELEVATION	FLOWLINE	CUT	STATION	REMARKS

BY: _____ DATE: _____

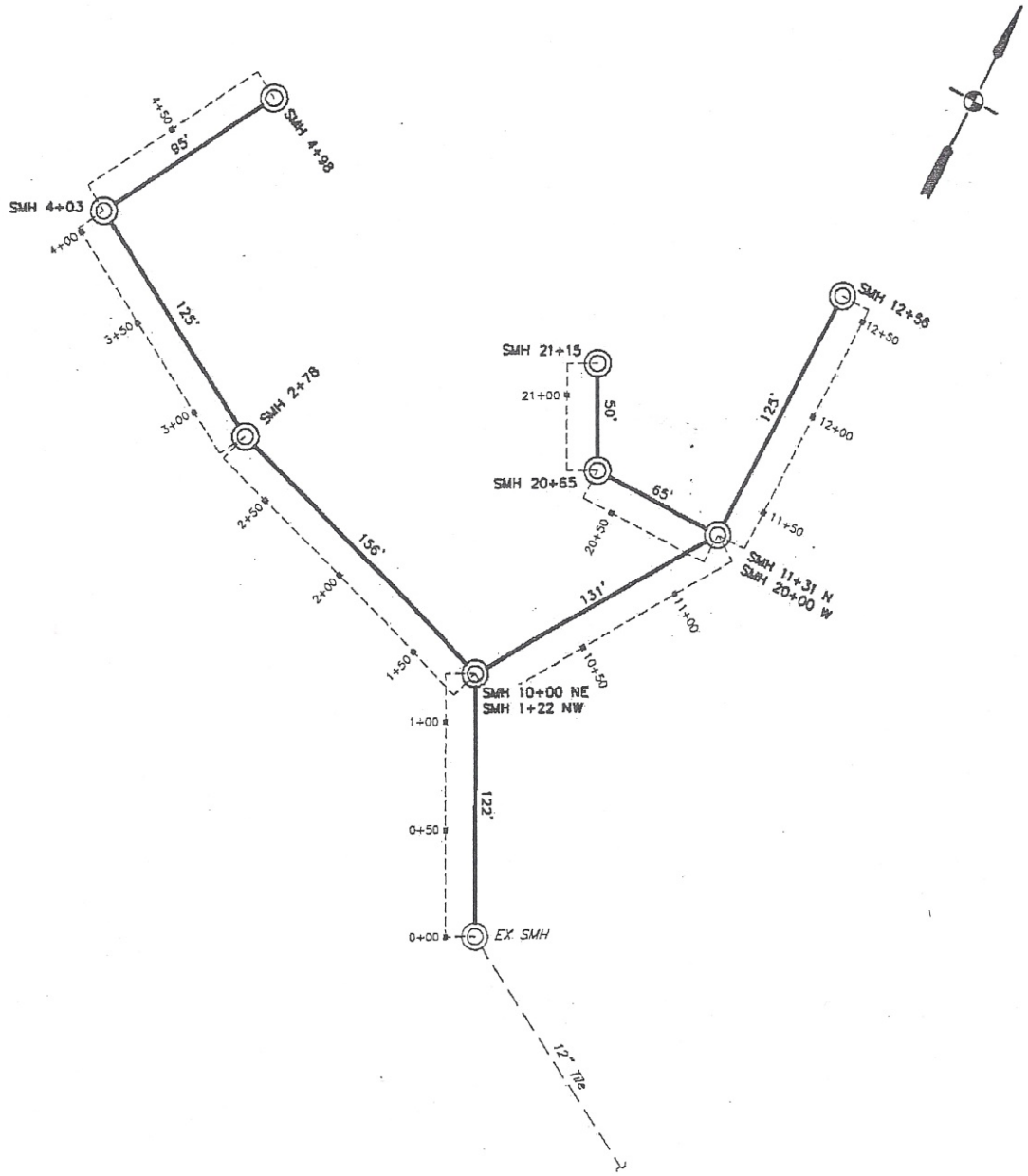
NOTEBOOK: _____ DATUM: _____

THE METROPOLITAN DISTRICT

DPA SEWER INSTALLATION

DETAILS

MDC



STANDARD SEWER STATIONING FOR D.P.A. PROJECTS

Fn:\blocks\DPA-SEWER.dwg

SECTION 01060

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 PERMITS

A. The Contractor will be required to obtain a license from the Town of Windsor prior to requesting necessary permits. All necessary permits shall be secured from the state, city or other authorities having jurisdiction for the digging of trenches in the streets or highways and all other necessary building and construction operations requiring permits. Any damage caused by the operations to any street, or existing structure either above or below the ground surface shall be repaired at no additional expense to the Owner.

B. An Excavation Permit and/or Obstruction Permit will be required to be obtained by Contractor from the governing agency where the project is executed and a copy for Owner's files shall be furnished by the Contractor prior to undertaking any work.

C. The cost of all or any permits secured shall be considered as having been included in the price or prices stated or bid in the Proposal. Copies of all necessary permits shall be submitted to and acknowledged by the Owner prior to starting any work for which a permit is required.

D. The Contractor will be required to contact Mr. Craig Scott (860) 278-7850 x3451) at the Metropolitan District and coordinate any discharge of groundwater or stormwater discharges to the combined sewer system. Provided as an attachment to this specification section is the MDC regulation S-2, Use of Sewers, Part 2, General Sewer Ordinance. The Contractor shall be able to meet all conditions of such ordinance with respect to such discharges.

E. The Contractor will be required to obtain, and pay all fees associated with, City /Town / State Excavation Sidewalk Occupancy, and Street Occupancy Permits. A copy for Owner's files shall be furnished by the Contractor prior to undertaking any Work within any City / Town / State road right-of-way.

F. Not Used.

G. The Contractor will be required to file general permits with the Connecticut Department of Energy and Environmental Protection for performance of the Work. At a minimum, the following permits will be required for submission to the CTDEEP:

a. General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer).

H. The Contractor will be required to obtain a permit from The Owner's Customer Service / Utility Services for any water service and sewer lateral installation including their repair.

I. The Contractor will be required to contact the Owner's Customer Service Department and fill out an Application and Tracking Document for Installation of a Temporary Hydrant Meter and pay any required fees associated with this application. The Contractor shall also be responsible for providing an Owner approved water meter that will be used for billing purposes for installation on the hydrants. See Section 01060B.

1.02 RELATED WORK:

A. SECTION 01100, SPECIAL PROVISIONS

B. SECTION 02145, HANDLING CONTAMINATED GROUNDWATER

C. SECTION 02150, BYPASS PUMPING, HANDLING STORM RUNOFF AND SANITARY SEWAGE FLOWS

D. SECTION 02260, HANDLING, TRANSPORTATIO AND DISPOSAL OF REGULATED SOIL

E. SECTION 02270, EROSION AND SEDIMENTATION CONTROLS

1.03 SUBMITTALS

A. Submit in accordance with Section 01300.

B. Copies of all necessary permits shall be submitted to and acknowledged by the Owner prior to starting any work for which a permit is required.

1.04 CONTACT

A. Mr. Robert A. Jarvis, P.E.
Town Engineer
Town of Windsor
275 Broad Street
Windsor, CT 06095
(860) 285-1804
email: jarvis@townofwindsorct.com

1.04 ENVIRONMENTAL REQUIREMENTS

A. The Contractor shall be responsible for preparing and submitting the Connecticut DEEP General Discharge Permit, if required, and for ensuring that all information contained within the permit is accurate and complete, including certification by a Professional Engineer. The Contractor shall be accountable for paying any registration fee to the Connecticut DEEP for the General Permits identified in the specifications.

B. The Contractor shall be responsible for employing the necessary treatment technology to meet the permit discharge requirements. These technologies may include the use of settling tanks in series, an oil/water separator, etc.

1.05 HEALTH AND SAFETY

A. The Contractor shall be responsible for preparing Health and Safety Plan(s) in accordance with applicable Occupational Safety and Health Administration (OSHA) regulations.

B. Have such plans available on site.

END OF SECTION

S-2 USE OF SEWERS

PART 2, GENERAL SEWER ORDINANCE

Section	Section Title
S2a	Permissible and Non-Permissible Discharge
S2b	Classification of Sewers
S2c	Discharge of Unauthorized Wastes
S2d	Determination of Classification of Sewer
S2e	Wastes Excluded from All Sewers
S2f	Determination for Exclusion
S2g	Protective Devices
S2h	Sampling Wells, Treatment Devices, Etc.
S2i	Expense of Operation of Sampling Wells and Other Devices
S2j	Entry for Inspection
S2k	Submission of Plans for Sampling Wells and Other Devices
S2l	Use of Sanitary Sewers
S2m	Cooling Water, Etc., in Sanitary Sewers
S2n	Use of Storm Drains
S2o	Prohibited Discharge into Storm Drains
S2p	Exceptions to Prohibited Discharges in Storm Drains
S2q	Illicit Connections to Storm Drains
S2r	Sewage to Storm Drains
S2s	Use of Auxiliary or Relief Drains
S2t	Use of Combined Sewers
S2u	Use of Overflow Sewers

SEC. S2a PERMISSIBLE AND NON-PERMISSIBLE DISCHARGE

No person or party shall discharge into or put into any public sewer or public drain of the District, or into any sewer, drain or fixture which thereafter discharges into any public sewer, drain or appurtenance thereof, any waste or substance other than such kinds or types of waters or water-carried wastes for the conveyance of which the particular sewer, drain or appurtenance is intended, designed or provided.

SEC. S2b CLASSIFICATION OF SEWERS

If the proceedings by or under which any public sewer was laid out, constructed or conveyed to the municipality, described the kind or kinds of waste waters for which that particular sewer was intended, or what waste waters should be excluded therefrom, or what kind of a sewer (i.e., sanitary, storm, combined, overflow, relief sewer, etc.) the sewer was to be, such description shall be considered evidence as to which of the several kinds of sewer described in this ordinance said particular sewer shall be considered for purposes of determining what waste waters may be discharged thereinto or shall be excluded therefrom. Provided that if the original designation of said sewer or wastes to be conveyed by it has been legally changed since the original proceedings, such amended classification shall be applicable.

SEC. S2c DISCHARGE OF UNAUTHORIZED WASTES

If wastes other than those for the conveyance of which a particular sewer was originally intended have been, at any time, discharged thereinto or conveyed thereby, that shall not constitute any amendment of the originally and formally expressed intended use for the sewer, unless the original designation shall have been amended by a competent municipal body.

SEC. S2d DETERMINATION OF CLASSIFICATION OF SEWER

If the proceedings for the layout and construction of any particular sewer or for its acquisition by the municipality did not indicate what kind of sewer or drain it was to be or what wastes could or could not be discharged therein, the Manager shall consider the pertinent facts and shall determine what kind of sewer or drain the said sewer is to be considered for the application of the provisions of this ordinance and what waste or waste waters shall be permitted to be discharged thereinto or be excluded therefrom. Except as, and until, the determination so made by the Manager of the kind of sewer or kinds of wastes to be permitted in or excluded from any sewer shall have been altered or changed by vote of the Bureau of Public Works, or other

competent body, such determination by the Manager shall control the classification of the sewer and the kind of wastes which may be permitted to be discharged thereinto or to be excluded therefrom.

SEC. S2e WASTES EXCLUDED FROM ALL SEWERS

No person or property owner shall discharge or permit to be discharged, directly or indirectly, from any premises under his control into any public sewer of any kind or type, any of the following:

(1) Any substance or object likely to damage, injure, destroy or cause an obstruction in any sewer, or appurtenance thereof, into which it may be discharged;

(2) Any substance which may attack, damage or alter by either abrasion or chemical action the materials of which the sewer and its appurtenances are composed or built;

(3) Sticks, stones of material size, coarse rubbish, rags, unground or unshredded garbage or refuse having particles more than one inch in their longest dimension, portions of any animal carcass more than one inch in longest dimension;

(4) Any debris or substance which by depositing any considerable quantity of sediment, by coagulation, by congealing or by attaching itself to the lining of the sewer or to other substances being transported within the sewer is likely to cause an obstruction in any sewer or appurtenance;

(5) Any gasoline, kerosene, alcohol, oil, tar, flammable or explosive gas or vapor or any substance which may generate or form any flammable, explosive or combustible substance, fluid, gas, vapor or mixture when combined with air, water or other substances commonly found in sewers; (See Section S2g).

(6) Steam, water vapor or other substance at a temperature above 150F, or substance which, upon coming into contact with water or sewage, will generate steam or vapor within such sewer; (See Section S2g).

(7) Any waste or waste water which is strongly acid, and which, when tested in the usual technical manner, has a "pH" less than 5.5 or which is strongly alkaline and has a "pH" more than 9.0; ("pH" means the logarithm of the reciprocal of the weight of the hydrogen ions in grams per liter of solution).

(8) Objectionable poisons, cyanides, or any substance likely to generate poisonous fumes that may interfere with, constitute a hazard to, or be dangerous to human beings or domestic animals;

(9) Any waste water or sewage containing considerable quantities of animal guts or tissues, entrails, offal, blood, feathers, hair, hides, scraps, unshredded vegetables, straw or cinders;

(10) Any water containing disinfectants, formaldehyde, toxic or poisonous substances in quantities sufficient to delay or interfere with sewage treatment and sludge digestion processes including the sedimentation, biological and chemical processes used by the District at its sewage treatment plants;

(11) Any considerable quantity of waste from an industrial or commercial process or processes containing more parts per million than the minimum indicated, by weight or by volume, for any of the following:

Chromium	2.0 ppm
Copper	2.0 ppm
Cyanides	1.0 ppm
Hydrogen sulphide, sulfur dioxide, nitrous oxide or any halogen gas	10 ppm
Iron, Silver, Tin, or other metals not listed	5.0 ppm
Lead	0.5 ppm
Mercury	0.0005 ppm
Nickel	2.0 ppm
Suspended solids other than above (i.e., solids that on the surface of or are in suspension in sewage which are removable by laboratory filtering)	600 ppm
Unemulsified or undissolved oil, grease or similar materials	100 ppm
Volatile Organic Compounds (total)	5.0 ppm
Zinc	2.0 ppm

(12) Any waste waters or sewage likely to cause damage, injury or loss to other persons or to the property of other persons who are lawfully entitled to use the sewer or sewers through which said wastes are discharged, or to any person or equipment engaged in sewage treatment and disposal for the District. This prohibition shall be understood as applying to the kind or character of wastes discharged into any sewer and as limiting the quantity of wastes or waters which may be discharged from any one parcel or plot of property and the rate or rates at which wastes are discharged to approximately the quantity of sewage or water which the sewer was intended to receive from that particular parcel or plot or from a typical parcel of that size or area.

(13) Unusual biochemical oxygen demand (B.O.D.), chemical oxygen demand (C.O.D.), or chlorine demand in such quantities as to constitute a significant load and/or harmful effect on the MDC sewerage system including the sewage treatment plants.

(14) Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits in applicable State or Federal regulations.

(Adopted June 3, 1968) (Effective June 13, 1968)

SEC. S2f DETERMINATION FOR EXCLUSION

In determining whether any waste discharged or proposed to be discharged into any public sewer or drain is to be excluded under Section S2e, and Sections S2l through S2n, inclusive, or any subdivisions of any of them, of this ordinance, consideration shall be given to the quantity, time or times, rate and manner of discharge, dilution and character of the waste in question, the size of the sewer or drain into which it is or is to be discharged, the probable quantity of other sewage in said sewer or drain at the time of discharge, the quantities of other objectionable wastes likely in said sewer or drain, and other pertinent facts. Minute quantities of a waste which would be objectionable in larger quantity may be permitted if sufficiently diluted when and as discharged, or if the quantity discharged is very small in comparison to the receiving sewer or drain and the flow therein at the time of discharge, upon specific permission from the Manager of the Bureau of Public Works; but any permission to discharge minute quantities of an otherwise excluded waste shall be revocable at any time by said Manager or his successor.

SEC. S2g PROTECTIVE DEVICES

At all premises where wastes or substances specified to be excluded from sewers or drains by this ordinance are customarily present and liable to be discharged directly or indirectly into any public sewer or drain, suitable and sufficient piping layouts, oil or grease traps or separators, screens, sedimentation chambers, diluting devices, storage and regulating, treatment, cooling or condensing equipment and similar devices or equipment shall be provided, maintained and operated to insure that no waste, substance, or water required to be excluded from said sewer or drain shall be discharged thereinto in violation of the requirements of this ordinance.

SEC. S2h SAMPLING WELLS, TREATMENT DEVICES, ETC.

At premises where any of the substances or wastes prescribed as being or to be excluded from any sewer or drain are present and liable to be discharged contrary to the limitations of this ordinance, the Manager or Chief Engineer of the Bureau of Public Works of said District may require that the owner of said premises provide, operate and maintain a sampling well or wells, a flow measuring device, manholes, catch basins or other suitable devices or treatment facilities on any or all house connection or drains from said premises near the point or points where said drains connect to any public sewer or drain. By means of said sampling well or wells, or other devices, the owner, owners and occupants of said premises and said Manager, Chief Engineer or the authorized representative of either, or any public officer charged with any duty involving the supervision of the disposal of waste waters may secure samples of or examine the wastes and waters discharged into said public sewer or drain and measure the quantities thereof for the purpose of ascertaining the compliance or non-compliance with the requirements of this ordinance.

SEC. S2i EXPENSE OF OPERATION OF SAMPLING WELLS AND OTHER DEVICES

Sampling wells and other devices required by this section shall be provided, operated and maintained by the persons in control of the premises, where required, without expense or cost to said District. Such devices shall be subject to the approval of the Manager or Chief Engineer.

SEC. S2j ENTRY FOR INSPECTION

The Manager or Chief Engineer, or any authorized representative of either of them, shall have the right to enter and inspect any part of any premises served by the public sewers and drains of said District upon which there may be reason to believe that violations of the requirements of this ordinance have occurred or are likely to occur, for the purpose of ascertaining facts as to such violation or suspected violation, or of obtaining samples of wastes, substances or waters being discharged into sewers or drains, or of inspecting devices provided to exclude such prohibited discharges.

SEC. S2k SUBMISSION OF PLANS FOR SAMPLING WELLS AND OTHER DEVICES

To facilitate compliance with the requirements of this section, the Manager or Chief Engineer of the Bureau of Public Works may require that the owner or party applying for a permit to install a new connection to any sewer or drain, or to alter or extend an existing house connection shall, in any case where a sampling well, oil or grease trap or separator, diluting device, or similar appurtenance is or may be required, furnish to said Manager or Chief Engineer as part of the application for said permit a plan or satisfactory description, or both, of the device (of whatever kind) which it is proposed to provide in accordance with the requirements of this section and description of the proposed operation thereof. Said plan, description, or both, shall become part of said application and the installation of the device in accordance therewith shall be a condition attached to the granting of said permit.

SEC. S2l USE OF SANITARY SEWERS

Except as specifically provided with reference to some particular sewer, sanitary sewers shall be used only for the conveyance and disposal of sanitary sewage as defined in Section S1b(2) of this ordinance and for diluted, water-carried industrial wastes which are not objectionable as provided hereinafter. Except as specifically provided for some particular sewer or location, no sanitary sewer shall be used to receive and convey or dispose of any storm or surface water, subsoil drainage, any large continuous flow of water seeping into buildings or excavations from soils or other underground sources, flows of natural springs, or ground waters, surplus from flowing wells, the discharge from roofs, roof conductors, yard drains, street or highway drains.

SEC. S2m COOLING WATER, ETC., IN SANITARY SEWERS

No large quantity of cooling water, as defined in Section S1b(5) of this ordinance, or similar waste waters in large volumes or discharged in large quantity at one time shall be discharged into any sanitary sewer without specific permission from the Manager of the Bureau of Public Works. Such permission, if granted in any case, shall be revocable by said Manager or his successor at any time upon proper notice. In general, such permission shall not be granted at locations where there is conveniently available a storm drain, natural watercourse or other convenient and suitable means of disposal for such large volumes of clean waste water. Before permitting such discharge into a sanitary sewer at any given location the Manager shall consider whether the discharge in question may cause excessive flows in the sewer or sewers

through which it is to be discharged and whether such discharge will occasion a burden on any pumping equipment, sewage treatment plant, or other appurtenance of the sewer system, out of proportion to the other needs of the community and to the contribution which the property from which the discharge comes makes or has made toward the costs of providing, maintaining and operating sewerage services by the District.

SEC. S2n USE OF STORM DRAINS

Storm water drains, also referred to as storm drains, storm sewers, conduits or similar terms, are in general intended to be used for conveying surface and storm waters from streets, yards and other ground surfaces, from roofs and other places. They may also be used for conveying subsoil drainage waters, the flow of natural springs, ground water, surplus from flowing wells, clean cooling water as defined in Section S1b(5) of this ordinance, and, subject to approval by the Manager, inoffensive industrial wastes.

SEC. S2o PROHIBITED DISCHARGE INTO STORM DRAINS

No person shall discharge or cause to be discharged into the storm sewer or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than stormwater.

Common stormwater pollutants include but are not limited to paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; trash, refuse, rubbish, garbage, food waste, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; oil and grease; cleaning products; pesticides, herbicides, and fertilizers; landscaping materials; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that from construction activities including but not limited to, painting, paving, concrete placement, sawcutting, and grading; wastes and residues that result from mobile washing operations; discharges from toilets; sinks; industrial processes; cooling systems; boilers; fabric cleaning; equipment cleaning; commercial vehicle cleaning; substances added to the storm drain to control root growth and noxious or offensive matter of any kind.

It shall be unlawful to cause materials to be deposited in such a manner or location as to constitute a threatened discharge into storm drains, gutters or watercourses.

Materials that are no longer contained in a pipe, tank or other container are considered to be threatened discharges unless they are actively being cleaned up.

SEC. S2p EXCEPTIONS TO PROHIBITED DISCHARGES IN STORM DRAINS

The following discharges are exempt from the discharge prohibitions established by this ordinance when properly managed:

1) Landscape irrigation; uncontaminated ground water discharges such as pumped ground water, foundation drains, water from crawl space pumps and footing drains; irrigation water; lawn watering runoff; residual street wash water; discharges or flows from fire fighting activities (except training); and naturally occurring discharges such as rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), springs, diverted stream flows and flows from riparian habitats and wetlands.

2) Discharges approved by the authorized enforcement agency as being necessary to protect public health and safety, such as flows from firefighting.

SEC. S2q ILLICIT CONNECTIONS TO STORM DRAINS

The construction, use, maintenance or continued existence of illicit connections to the storm sewer is prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

SEC. S2r SEWAGE TO A STORM DRAINS

No person owning or in control of any premises shall connect a line conveying sewage to the storm sewer, or allow such a connection to continue.

SEC. S2s USE OF AUXILIARY OR RELIEF DRAINS

When and/or where, because an existing combined sewer was not adequate to carry the storm water runoff from its tributary area, an auxiliary storm drain or overflow sewer has been built to divert storm water from the combined sewer or to dispose of the excess flow in a combined sewer and such auxiliary storm drain or overflow sewer is conveniently located with respect to any piece of property, the Manager of the Bureau of Public Works may, if he deems it to be in the public interest to do so,

require that when a new building is erected upon said property adjacent to said auxiliary drain or overflow sewer or when an existing building is extensively remodeled in whole or in part, the storm or roof and other clean or unpolluted waste waters from said building or parts thereof shall be kept separate from the sanitary and other wastes from such building and that the storm, roof and surface water from said building shall be discharged into the said storm drain or overflow sewer, and that other wastes shall be discharged into the combined sewer, all of which shall be done irrespective of any rights to use the combined sewer which the owners of said property may have had prior to the construction of the auxiliary storm drain or overflow sewer. Such diversion of storm or roof waters to the auxiliary storm drain or overflow sewer shall be made to avoid damage or injury to said property and its occupants and to others by the discharge of storm water into the existing combined sewer in excess of the capacity of such combined sewer to safely carry away the quantities of water which might otherwise be discharged into it, and said diversion shall be made, without compensation for the cost thereof, by the owners of the property in question.

SEC. S2t USE OF COMBINED SEWERS

A combined sewer, except as provided in Section S2p or as otherwise specifically provided in any particular case, may be used to receive and convey any sewage or waste waters which under the preceding sections of this ordinance may be lawfully discharged into either a sanitary sewer or a storm drain. No waste water or substance which is or has been excluded from both sanitary sewers and storm drains by the preceding sections of this ordinance shall be discharged, directly or indirectly, into any combined sewer. (See also Section S2p).

SEC. S2u USE OF OVERFLOW SEWERS

The Manager or Chief Engineer of the Bureau of Public Works, or the authorized representative of one of them, may, in his discretion, permit waters which by the preceding sections of this ordinance may legally be discharged into a storm drain to be discharged into an overflow, but he shall not be required to permit such discharge into an overflow sewer or structure if he deems that such discharge is not in the public interest. (See also Section S2p).

The Metropolitan District

Year 2012

Application and Tracking Document for Installation of a Temporary Hydrant Meter

MDC Application Number: 2012-

This section to be filled in by Applicant

Name: _____

Address: _____ Date: _____

_____

_____ Anticipated Installation Date: _____

For what purpose will meter be used? List all uses. Expected Removal Date: _____

☐ Road/Construction Contractor ☐ Irrigation/Farming

☐ Landscape Contractor ☐ Other (specify) DEMOLISHING BLDG

Location where meter will be installed: _____ street

_____ nearest intersecting street

_____ Town

Work Phone# : _____ 24 Hour Emergency # : _____

Cell Phone # : _____ Fax #: _____

email address: _____ Preferred phone # during day: _____

Signature of applicant Certifies that applicant has read and will comply with Public Health Code Cross Connection Regulation 19-13-B37, 19-13-B38a and District guidelines for safe operation of hydrant use. Applicant **MUST** notify The Metropolitan District prior to removal of hydrant meter.

Signed by: _____ Date: _____

Customer signature

This section to be filled in by Command Center/Customer Service Department:

Date: _____ Meter Number: _____ Initial Meter Reading: _____

Non-refundable $250 application/water usage fee, plus an additional $750 connection/inspection fee

Check Number: _____ Document number: _____

Signed by: _____

Manager of Customer Services or Designee

This section to be filled in by Cross-Connection Liaison/Technician (if backflow prevention is required)

Date of Test: _____ Installed by: _____

Tag # _____

Did device pass test? YES ☐ NO ☐

Approved for Use: _____ Date: _____

Cross-Connection Technician/Liaison

Approved moving of hydrant meter:

Date: _____

Location to: _____ street

_____ nearest intersecting street

Town

SECTION 01090

REFERENCE STANDARDS

PART 1 - GENERAL

1.01 CODES AND STANDARDS.

A. Any material, method, or procedure specified by reference to the number, symbol, or title of a specific code, specification, or standard, such as a Commercial Standard, American National Standard, Federal or State Specification, Industry or Government Code, or a trade association code or standard, shall, unless a particular issue is designated, comply with the requirements in the latest revision thereof and any amendments or supplements thereto in effect on the date of these contract documents, as indicated on the cover, except as limited to type, class, or grade or modified in such reference.

B. The code, specification, or standard referred to, except as modified in these Specifications, shall have full force and effect as though printed in these Specifications. These codes, specifications and standards are not furnished to the Contractor since contractors, manufacturers and trades involved are assumed to be familiar with their requirements. The District will furnish, upon request, information as to how copies of the codes, specifications, and standards referred to may be obtained.

C It shall be the responsibility of the Contractor to determine and become aware of the meaning, use and intent of abbreviations when and where used under the full scope of the Contract.

1.02 METROPOLITAN DISTRICT STANDARDS.

A. The Metropolitan District has developed the following standards and specifications. Unless specified or shown otherwise in the Specifications and on the Drawings of the Contract Documents, all materials and installation details shall conform to the requirements of the latest edition of the manuals.

1. Water Service Standard Details Manual.

2. Standard General Conditions and Standard Specifications for Construction of Sanitary Sewers, Storm Drains and Water Mains and Related Structures; October 1990.

3. Sanitary Sewer – Storm Drain Connection Manual.

4. Developer’s Manual For Water Main Design And Installation Standards.

1.03 OTHER REFERENCE STANDARDS.

A. The following codes, specifications or standards listed hereinafter, shall have full force and effect as though printed in these specifications, except as modified for this Contract.

1. Connecticut DOT	Connecticut Department of Transportation's "Standard Specifications for Roads, Bridges and Incidental Construction, Form 816." and amendments thereto.
2. ACI	American Concrete Institute
3. ANSI/AWWA	American National Standards Institute and American Water Works Association.
4. ASTM	American Society of Testing Materials.
5. AASHTO	American Association of State Highway and Transportation Officials.
6. CGSESC	Connecticut Guidelines for Soil Erosion and Sediment Control
7. CSSWC	Connecticut Council on Soil and Water Conservation.
8. NFPA	National Fire Protection Association
9. USASI	United States - American Standards Institute.
10. MDC	Sanitary Sewer and Storm Drain Connection Manual
11. Town of Windsor	Highway Engineering Standards and Specifications.

B. All the other standards issued by the authority where the project is executed.

1.04 QUALITY ASSURANCE

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents.

C. Obtain copies of standards when required by Contract Documents.

D. Maintain copy at job site during submittals, planning, and progress of the specific work until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention of inference otherwise in any reference document.

G. Ho-pack compaction is not acceptable in this project.

1.05 ABBREVIATIONS

A. Abbreviations used may include, but are not limited to, the following:

ABS	Acrylonitrile Butadiene Styrene
A.C.	Alternating Current Air Conditioning; Asbestos Cement
Adj.	Adjustable
AGA	American Gas Association
Agg.	Aggregate
Allow.	Allowance
Alum.	Aluminum
a.m.	Ante Meridiem
Amp .	Ampere
Approx.	Approximate
Asb.	Asbestos
ASCE	American Society of Civil Engineers
Attchmt.	Attachment
Avg.	Average
A.W.G.	American Wire Gauge
Bit; Bitum.	Bituminous
Bldg.	Building
Blk.	Block
Brk.	Brick
Bsn.	Basin
BTU	British Thermal Unit

C	Hundred;
	Centrigade
C/C	Center to Center
Calc.	Calculated
Cap.	Capacity
C.B.	Circuit Breaker, Catch Basin
C.C.F.	Hundred Cubic Feet
Cem.	Cement
C.F.	Cubic Feet
CFM	Cubic Feet per Minute
CFS	Cubic Feet per Second
c.g.	Center of Gravity
C.I.	Cast Iron
C.I.P.	Cast in Place; Cast Iron Pipe
Circ.	Circuit
C.L.F.	Hundred Linear Feet
cm	Centimeter
CMP	Corr. Metal Pipe
Comb.	Combination, Combined
Conc.	Concrete
Cont.	Continuous
	Continued
Corr.	Corrugated
C.P.M.	Critical Path Method
CPVC	Chlorinated Polyvinyl Chloride
CRT	Cathode-ray Tube
C.S.F.	Hundred Square Feet
CSI	Construction Specifications Institute
Cu	Cubic
Cu. Ft.	Cubic Foot
Cwt.	100 Pounds
C.Y.	Cubic Yard (27 cubic feet)
C.Y./Hr.	Cubic Yard per Hour
Cyl.	Cylinder
D	Deep, Depth; discharge
DEEP	Department of Energy and Environmental Protection
Dis; Disch.	Discharge
Dbl.	Double
D.C.	Direct Current
DI	Ductile Iron
Distrib.	Distribution
D.S.	Double Strength
Dty.	Duty
Ea.	Each
Elec.	Electrician, Electrical
Elev.	Elevator, Elevating, Elevation

EPA	Environmental Protection Agency
Equip.	Equipment
Est.	Estimated
Excav.	Excavation
Ext.	Extension
Fr.	Frame
Ft.	Foot; Feet
Fndtn.	Foundation
Ftg.	Footing
Gal./Min.	Gallon Per Minute
Galv.	Galvanized
Gen.	General
GPD	Gallons per Day
GPH	Gallons per Hour
GPM	Gallons per Minute
GR	Grade
H.C.	High Capacity; House Connection
H.D.	Heavy Duty; High Density
H.P.	Horsepower, High Pressure
Hr.	Hour
Hrs./Day	Hours Per Day
Ht.	Height
HVAC	Heating, Ventilating & Air Conditioning
Hvy.	Heavy
Hydr.	Hydrant
ID	Inside Diameter
I.D	Inside Dimension
	Identification
In.	Inch
Incl.	Included, Including
Int.	Interior
Inst.	Installation
Insul.	Insulation
I.P.	Iron Pipe
kg	Kilogram
Kip.	1000 Pounds
KW	Kilo Watt
KWh	Kilowatt-hour
L	Labor Only; Length; Long
Lab.	Labor
lat, Lat.	Latitude, Lateral
Lav.	Lavatory
lb.; #	Pound
Ld.	Load
L.F.	Linear Foot
L.L.	Live Load

L.P.	Low Pressure
L.S.	Lump Sum
Lt.	Light
Maint.	Maintenance
Mat.	Material
Max.	Maximum
MBE	Minority Business Enterprise.
Med.	Medium
Mfg.	Manufacturing
Mfrs.	Manufacturers
mg	Milligram
MGD	Million Gallons per Day
MH	Manhole; Man Hour
Mi.	Mile
Min.	Minimum
Misc.	Miscellaneous
Mo.	Month
Mobil.	Mobilization
MPH	Miles per Hour
Mult.	Multi; Multiply
N	North
NEWWA	New England WaterWorks Association
NPT	National Pipe Thread
NA	Not Available, Not Applicable
No.	Number
OC	On Center
OD	Outside Diameter
O.D.	Outside Dimension
psi	pounds per square inch
psig	pounds per square inch gage
PVC	Polyvinyl Chloride
s.f.	Square foot
s.y.	Square yard
SLBE	Small Local Business Enterprise
WBE	Women's Business Enterprise

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 01100

SPECIAL PROVISIONS

PART I - GENERAL

A. GENERAL OBLIGATION OF THE CONTRACTOR

1. General obligations of the Contractor shall be set forth in the Contract Documents. Unless special payment is specifically provided in Section 01025, all incidental work and expense in connection with the completion of the work under the Contract will be considered a subsidiary obligation of the Contractor and all such costs shall be included in the appropriate item in the Bid Form in connection with which the costs are incurred.

B. SITE INVESTIGATION

1. The Contractor shall satisfy himself/herself as to the conditions existing within the project area, the type of equipment required to perform the work, the character, quality and quantity of the subsurface materials to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the Drawings and related sections. Any failure by the Contractor to acquaint himself with the available information will not relieve him/her from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner.

C. TEST PITS

1. Test pits for the purpose of locating underground pipelines or structures in advance of the construction shall be excavated and backfilled at the direction of the Engineer. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Engineer.

2. Test pits are to be as small as possible while maintaining worker safety. Hand excavation will be required within two (2) feet of any utility. Refer to Section 02011 for additional requirements.

3. Test pits shall be excavated within 30 days from Notice to Proceed, and in advance of the actual construction of the storm / sewer and water pipelines, catch basins and manholes. The purpose of these test pits is to identify any utility conflicts. The Engineer will identify the location of these test pits immediately after Notice to Proceed.

D. PUBLIC UTILITIES

1. Underdrains (Where applicable)

   a. When removing and replacing existing catch basins, the Contractor shall reconnect existing roadway underdrains that were connected to the existing catch basin to the new storm drain in accordance with the governing agency's requirements and as directed by the Engineer.

2. Call Before You Dig

   a. Notify Call Before You Dig at 1-800-922-4455 or 811 at least 72 hours before digging, trenching, blasting, demolishing, boring, backfilling, grading, landscaping or other earth moving operations in any public ways, rights of way and easements.

3. Supply the local police department, fire department, Town of Windsor public school department, Town of Windsor, St. Gabriel School, bus company serving Windsor public schools and St. Gabriel School, and the MDC with the following information:

   a. A list of streets and intersections where work will be in progress to be supplied at intervals as required by the Engineer.

   b. Areas where approved detours are in effect

   c. Immediate notification of any drain, gas, water main breaks

   d. Emergency Command Center Telephone No. 860-513-3388

   e. Command Center/Engineering/Claims Notification Procedures For All MDC Contractor Project Areas. See the communications/protocol document attached.

E. UTILITY CONFLICTS – GENERAL

1. Relocation of existing utilities are required to address known conflicts where shown on the Drawings. Where the relocation can be performed by the Contractor forces, the Work shall be performed in a timely manner to avoid delays. Where the relocation of the utility must be performed by others, the Contractor shall coordinate this work with the utility company and make all arrangements with the utility company with respect to relocating their utilities and schedule his work to avoid any delays. This may require moving the operation to another portion of the work. The Contractor shall have no claim for delay associated with addressing utility relocations.

2. The Contractor shall exercise extreme caution when excavating in the vicinity of utility structures to avoid any damage. The Contractor shall be responsible for coordinating and scheduling all aspects of work required by private utilities during construction, including the relocation, the protection and the support of utility infrastructures.

3. Any damage to the utility structures that is a result of the Contractor's actions shall be the responsibility of the Contractor.

4. Invoices issued by the utility companies shall be submitted directly to the MDC Project Manager, Metropolitan District, 555 Main Street, P.O. Box 800, Hartford, CT, 061420800. Invoices issued by utility companies for relocating utilities that are not in direct conflict with the proposed work or are relocated for the Contractor's convenience shall be paid at the Contractor's expense.

5. During the Construction of this project, other Utility Companies including CL&P, COMCAST, AT&T, Yankee Gas, etc., may have their contractors working within the limits of this project for removing and installing utilities. The Contractor shall be responsible for coordinating his work with other contractors working within the limits of the project.

6. Not all of the private storm drains, private sanitary services, water, gas, and electrical services, overhead utilities and other utilities to the adjacent buildings are shown. It is to be expected that each building will have service connections for the various utilities. The Contractor shall have these services located prior to making any excavation. All services shall be protected from damage, and shall be reconnected or be repaired by the Contractor at no additional cost to the Owner (unless otherwise specified in Section 01025). The Contractor shall pay particular attention to safety issues relating to electrical facilities, both overhead and underground.

F. Planned Bypass Activities

1. One week prior to planned bypass work, the Contractor is required to submit a letter to the Iliana Raffa at the Connecticut DEEP. The letter must include the following information about the planned bypass: where, when, why, and estimated duration. A copy of the letter will be sent to Craig Scott of the Owner's EH&S department and the Owner's Command Center.

2. One day prior to planned bypass work, the Contractor is required to call Iliana Raffa at the Connecticut DEEP (860) 424-3758 and inform her that the planned bypass will occur the following day as outlined in the letter.

3. Within 72 hours of completing the planned bypass work, the Contractor must complete the Planned Bypass Reporting Form and email to Iliana Raffa at the Connecticut DEEP (Iliana.raffa@ct.gov), Craig Scott at

(cscott@themdc.com), and Owner's Command Center at dispatcher@themdc.com. The Planned Bypass Reporting Form follows this Section.

4. If a sewage spill occurs, the Contractor must ***immediately*** notify the Construction Inspector and the Owner's Command Center at (860) 513-3388 so a Bypass Report can be completed by the Owner.

G. GAS MAINS

1. Material of gas mains, as provided by Yankee Gas, is noted on the Drawings.

2. The requirements for work adjacent to the gas mains are attached to this specification. Those requirements are augmented and highlighted by the requirements in this section. Contractor shall abide by these requirements when working in the vicinity of gas mains and service connections. Failure to abide by these requirements may render the gas main or service connections to be replaced by Yankee Gas. Failure by the Contractor that leads to gas main replacement shall be at no additional cost to the Owner.

3. When installing catch basins, no excavation shall be within 12 inches of the existing cast iron gas mains.

4. As specified elsewhere herein, blasting is not permitted.

H. TELEPHONE AND ELECTRICAL CONDUITS

1. The telephone and electrical conduits in this area are major facilities that are important to AT&T, CL&P and their customers. In addition, AT&T, CL&P has major transmission lines within the project limits. The Contractor shall exercise caution when working in the vicinity of these conduits and is responsible for protecting these facilities. Damage to these conduits would be quite costly to repair. Any damage to the telephone conduits that is a result of the Contractor's actions will be the responsibility of the Contractor.

I. BACKFILL MATERIAL

1. The native material obtained during the excavation within the limits of this project shall not be used as backfill material. The Contractor shall backfill all the excavations using material as specified and shown on the drawings. All backfill used for the installation of sewer manholes , sewer drain connections and test pits, shall be considered included in the various bid items included in the Proposal.

J. RESTORE FENCES, GUIDERAILS AND STAIRS

1. Fences, guiderails, stairs and all miscellaneous items not otherwise specified, encountered during the work shall be carefully protected for resetting during surface restoration. Any item damaged shall be replaced at no additional cost. Each item shall be reset as close to its original location as practicable. All work shall be approved by the Engineer.

K. RESTORING EASEMENTS AND RIGHT-OF-WAYS

1. Be responsible for all damage to private property due to the operations. Protect from injury all walls, fences, cultivated shrubbery, pavement, underground facilities, such as water pipe, wiring, lights, or other utilities which may be encountered along the route. If removal and replacement are required, it shall be done in a workmanlike manner so that replacement is equivalent to that which existed prior to construction.

2. Existing lawn and sod surfaces damaged by construction shall be replaced. Cut and replace the lawn and sod, or restore the areas with an equivalent depth and quality of loam, seed and fertilizer as necessary to produce a stand of grass at least equal to that existing prior to construction. These areas shall be maintained and reseeded, if necessary, until all work under this Contract has been completed and accepted. Any additional work required to restore property to the original condition shall be performed.

3. Existing bollards, fences, trees, shrubs, plants and bushes damaged or removed shall be replaced. The work shall also include removing and replacing those bollards, fences, trees, shrubs and bushes indicated on the Drawings. It shall include the careful excavation of the root ball which shall be wrapped with burlap while out of the ground. Replant them after backfilling the trench, stake them in an upright position and shall periodically water replanted trees, bushes and shrubs. Be fully responsible for ensuring that any and all trees, bushes and shrubs removed and replanted "take" and return to a viable state. Any replanted item that fails to "take" or that is so damaged as to be unsuitable for replanting shall be replaced, at no additional cost to the Owner, with a tree, bush or shrub equal to the one removed.

4. The Engineer will inspect all work for provisional acceptance upon the written request received at least 10 days before the anticipated date of inspection.

    a. After all necessary corrective work has been completed, the Engineer will certify in writing the provisional acceptance of the planting.

5. All plants shall be guaranteed for not less than 1 full year from the time of provisional acceptance.

a. At the end of this period, any plant that is missing, dead, or not in satisfactory growth, as determined by the Engineer, shall be replaced.

b. All replacements shall be plants of the same kind and size. They shall be furnished and planted as specified herein. The cost of replacement shall be borne by the Contractor except where it can be definitely shown that loss resulted from vandalism or the Owner's failure to maintain planting as instructed.

c. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted by the landscape Contractor at least 10 days before the anticipated date.

d. After all necessary corrective work has been completed and tree staking has been removed, the Engineer will certify in writing the final acceptance of the planting.

L. PROTECTION AND/OR REMOVAL AND REPLACEMENT OF SIGNS, LAMPPOSTS AND MAILBOXES

1. Existing signs, lampposts, mailboxes, etc. which may be damaged or removed during the course of installing the new pipelines shall be reinstalled in a vertical position at the same location from which they were removed. Replace damaged items with items of equal or better quality than the damaged items. Provide a concrete anchor as necessary, to ensure a rigid alignment at no additional cost. Exercise care in the reinstallation of all items to prevent damage to the newly installed pipelines.

M. PROTECTION AND BRACING OF UTILITY POLES

1. Make all arrangements with the proper utility companies for bracing and protection of all utility poles that may be damaged or endangered by the operations. Work under this item shall include the related removal and reinstallation of guy wires, or support poles whether shown on the Drawings or not.

N. CROSSING AND PROTECTING EXISTING UTILITIES

1. The Contractor shall support, protect and maintain all pipes, conduits, sewers, drains, wires and poles in the line of excavation or adjacent thereto, and all fences, buildings or other structures which may be damaged by the work herein contemplated. In accordance with Public Act 77-350, the Contractor is required to notify any utility with facilities in the vicinity of the excavations at least two full days prior to commencing

excavation. Notification shall be given by using the “Call Before You Dig” state-wide, toll-free telephone number 1-800-922-4455. Responsibility for proper notification of all utilities shall rest with the Contractor.

2. Whenever the work of this Contract crosses under or is located adjacent to gas mains, water mains, sewers, underdrains, electric ducts or poles, fiber ducts, telephone ducts or poles, or cable TV ducts and conduits, the Contractor shall notify the respective companies of such underground structures in the vicinity of the work and make all necessary arrangements with the Company for doing any work which may affect the property of the company, or interfere with its operation. The Contractor shall take special care to avoid damage to these underground structures and shall be liable for any damage that may be caused by an act, omission or neglect on his/her part and shall pay all expenses of every kind of incidental to this work.

3. Perform all extra work required in crossing culverts, water courses, including brooks and drainage ditches, storm drains, gas mains, water mains, electric, telephone, gas and water services and other utilities. This work shall include: bracing, hand excavation, backfill (except screened gravel) and any other work required for crossing the utility or obstruction not included for payment in other items in the Bid Form. Notification of Utility Companies shall be as specified in Section 01046.

4. At pipe crossings and where designated by the Engineer, furnish and place screened gravel bedding so that the existing utility or pipe is firmly supported for its entire exposed length. The bedding shall extend to the mid-diameter of the pipe crossed. Payment for screened gravel at pipe crossings will be made according to the unit price bid established in the Bid Form. Payment for concrete encasement of utilities at crossings will be made according to the unit price established in the Bid Form.

5. Whenever it becomes necessary to change the location of any underground structures such as water or gas pipes, sewers, drains, conduits, etc., not otherwise provided for in these Specifications, the Contractor shall do the whole or portion of the work of making changes as the Engineer may require in writing, and this work shall be paid for under the respective item in the Bid Form. The Contractor will not receive any payment for equipment and labor tied up and unable to work because of this relocation work. If, in the opinion of the Engineer, the changes that are required can best be made by the parties owning the structures or by forces of the Owner, the Contractor shall give all reasonable facilities for doing this work in a proper manner and shall not claim or receive any payment for damages for delaying the continuance of his/her own work.

O. Traffic Impacts: Refer to Section 01570.

P. For Scope and Sequence of Work, refer to Section 01014.

END OF SECTION

STATE OF CONNECTICUT
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
WATER PROTECTION AND LAND REUSE BUREAU

BYPASS REPORT FORM

City or Town: _____

Type of Bypass
____ Raw Sewage
____ Disinfected Raw Sewage
____ Partially Treated Sewage
____ Disinfected Partially Treated Sewage
____ Sludge Spill
____ Other:_____

Location of Bypass
____Treatment Plant
____Pump Station
____Manhole, ____Lateral, ____Basement
____Main, ____Private

Cause of Bypass
____ Weather Conditions _____
_____
____ Mechanical Equipment Failure
____ Electric Utility Failure
____ Electrical Equipment Failure
____ Approved Shutdown
____Limited capacity: ____Dry weather
____Wet weather

Blockage of Sewer Line due to:
____Grease, ____ Roots, ____Other:
_____

Exact Location of By-Pass: _____

Date and Time By-Pass was Discovered: _____/_____/_____ ____/____ AM/PM

Date and Time By-Pass was Stopped: _____/_____/_____ ____/____ AM/PM

How By-Pass was Discovered: _____
_____

Quantity/Volume of By-Pass: _____

How Quantity/Volume was Determined: _____
_____

If Equipment Failure, date of last inspection, maintenance or repairs: _____/_____/_____

Receiving Waters (If Applicable)_____

Steps taken to minimize volume and duration of By-Pass:_____
_____

Action taken to eliminate By-Pass:_____
_____

Steps Taken to prevent recurrence of By-Pass:_____
_____

Was area of By-Pass cleaned of debris? _____ Yes _____ No

Method Used:_____

Date of Last Blockage__/ Back up__/ Surcharge ___ at this location: _____/_____/_____

7/27/2011

BYPASS NOTIFICATION LOG

Permittee shall notify DEEP within 2 hours of becoming aware of the bypass and shall submit a written report within 5 days.

2 hours notification required

DATE/ TIME

___/___ CT DEEP - Iliana Raffa (860) 424-3758 (Primary DEEP Contact)
If Iliana Raffa is not available, you **must** call Municipal Facilities Section at number below:

___/___ CT DEEP (860) 424-3704 [(860) 424-3338 (DEEP Emergency Dispatch) only for after hours] DO NOT LEAVE VOICE MAIL MESSAGES

_____ Name of person contacted

___/___ CT Bureau of Aquaculture (203) 874-0696 Option 2 Monday through Friday 8:00 and 4:30 pm (Required only if bypass is south of Interstate Route 95)
_____ Name of person contacted.
After hours/weekend must refer to call list provided by Bureau of Aquaculture
DO NOT LEAVE VOICE MAIL MESSAGES

___/___ CT Dept. of Public Health (860) 509-7333 (Drinking Water Section) notify Monday through Friday 8:30 to 5:00 pm if bypass occurred in following towns: Bristol, Cheshire, Danbury, Goshen, Groton, Hamden, Manchester, Mansfield, Middletown, North Haven, Norwalk, Ridgefield, Shelton, Stamford Vernon, and Woodstock.
___/___ _____ Name of person contacted

___/___ CT Dept. of Public Health (860) 509-7296 (Recreation Section) notify from Monday through Friday 8:30 to 5:00pm if bypass occurred from April 1st through September 30th.
_____ Name of person contacted

___/___ Local Health Department or Regional Health District
_____ Name of person contacted

___/___ Health Director of Contiguous Towns (Coastal Plants Only) or Health Director of Town Downstream (Inland Plants)
_____ Name of person contacted

Final report within 5 days

___/___ Fax to CT DEEP, Iliana Ayala (860) 424-4067

___/___ Fax to CT Aquaculture (203) 783-9976 (If south of I-95)

___/___ Fax to Local Health Department or Regional Health District

Report Submitted by: _____ Title: _____
Signature: _____Date: _____Phone # _____
Submit Completed Report to either by fax or by mail: State of Connecticut, Department of Energy & Environmental Protection, Water Bureau - Attention: Iliana Raffa, 79 Elm Street, Hartford, CT 06106-5127 Rev. 7/27/2011

Bypass Report Form
When to be submitted?

Under Section 22a-430-3(k) of the Regulations of Connecticut State Agencies ("RCSA"), Bypass "means the diversion of wastes from any portion of the wastewater collection or treatment facilities".

Examples of bypasses within a **collection System**

- A planned bypass of sewage in the sewer collection system **not** causing sewage to reach the ground surface, a storm drain, surface waters, or into public, residential or commercial property.
- Backup of sewage from municipal line into residential or commercial property.
- Surcharging of a sewer line causing an overflow of sewage to the ground surface, a storm drain or surface waters.
- Overflow of sewage at a sewage pumping station causing sewage to reach the ground surface, a storm drain or surface waters.

Examples of bypasses within **sewage treatment facility**

- A bypass of the entire facility or loss of disinfection.
- A bypass of any process in the facility due to infiltration, heavy rain, equipment failure or electrical failure. Examples: Flows are too high to keep effluent filters from becoming flooded, some flow is passed around filters but disinfection is not lost.
- A planned bypass of any process in the facility **NOT** causing sewage to reach the ground surface, a storm drain or surface

Notify immediately the local or regional Department of Health Services.

Notify immediately the local or regional Department of Health Services and CT Department of Health, Drinking Water Section and the Recreation Section.
See Bypass report form and notification log for details.

Notify immediately the Department of Agriculture, Bureau of Aquaculture at (203) 874-0696 Option 2 Monday through Friday 8 – 4:30pm when there is a potential for **contamination of shellfish** or when any bypass occurs south of Interstate 95 anywhere in CT. After hours/weekend must refer to call list provided

Notify DEEP, Iliana Raffa during normal business hours at 860-424-3758.

Under Section 22a-430-3(k)(4) of the Regulations of Connecticut State Agencies ("RCSA") the permittee shall, within two hours of becoming aware of such condition, notify Iliana Raffa (860) 424-3758 during normal business hours (8 am to 4 pm). If Iliana Raffa is not available in person, call (860) 424-3704. DO NOT LEAVE VOICE MAIL MESSAGES Outside of the hours above, call DEEP Emergency Dispatch at (860) 424-3338.

Notify DEEP, Iliana Raffa during normal business hours at 860-424-3758.

Submit to the DEEP within five days the **Bypass report form and notification log** by fax at (860) 424-4067 or by mail.

07/27/2011

MDC CONTRACTOR
PLANNED BYPASS REPORT FORM

City or Town:_____

TYPE OF BYPASS

_____Raw Sewage
_____Chlorinated Raw Sewage
_____Sludge Spill
_____Other:_____
_____

CAUSE OF BYPASS

_____Mechanical Equipment Failure
_____Electric Utility Failure
_____Electrical Equipment Failure
_____Blockage of Sewer Line
_____Approved Shutdown
_____ Other:_____
_____

Date and Time Bypass was Initiated: _____ _____
Date and Time Bypass was Stopped: _____ _____

Exact Location of Bypass:_____
_____

Contractor Information-Name, phone, email address:_____
_____

Quantity/Volume of Bypass:_____
_____

How Quantity/Volume was Determined:_____
_____

If Equipment Failure, date of last inspection, maintenance or repairs:_____
_____

Reason for Bypass Event:_____
_____

PLANNED BY-PASS NOTIFICATION LOG

Time

_____ **CT DEP- Iliana Raffa (860) 424-3785 (Primary DEP Contact).**

***Leave voice mail message if Iliana Raffa is not available.**

_____ **MDC EH&S- Craig Scott (860) 278-7850, ext 3451**

BY-PASS REPORT LOG

Time **Date**

_____ _____ **Email to Iliana.Raffa@ct.gov**

_____ _____ **Email to cscott@themdc.com**

_____ _____ **Email to Dispatcher@themdc.com (MDC Command Center)**

Report submitted by

(print name):_____ Title:_____

Signature:_____ Date:_____

Connecticut Department of Energy & Environmental Protection

Guidance for Utility Company Excavation

The Department of Energy & Environmental Protection (DEEP) currently recommends the following procedure to be followed by utilities that encounter contaminated soil during repair or construction activities. This applies to cases where:

1. Contaminated soils/waste are encountered on property not owned by the utility, and
2. Contamination was not created by the utility.

The utility may reuse the contaminated soil in the same excavation within the same area of concern without prior approval by DEEP provided:

1. Any condition that would be a significant environmental hazard as defined in CGS Section 22a-6(u) is reported by the utility and that the location is identified on a map submitted to the DEEP Remediation Division.
2. Any excess contaminated material is disposed in accordance with solid and hazardous waste regulations as appropriate.
3. The upper 1 foot of the excavation is filled with clean fill material or paved.

Any sampling required to make a determination as to whether a significant environmental hazard exists or how excess spoils will be disposed will be the responsibility of the public or private entity performing the excavation.

Property Transfer Program | Remediation / Site Clean-up

Content Last Updated: January 2001

COMMAND CENTER / ENGINEERING / CLAIMS NOTIFICATION PROCEDURES

FOR ALL MDC CONTRACTOR PROJECT AREAS

During Normal Working Hours (Day Time)

1. If the Command Center (CC) is notified from any source (customer, inspector, other) of a problem in the field:

   The CC will call the Project Manager to relay the problem. The Project Manager will notify the Field Engineer and the Inspector.

   If the problem is believed to be caused by a Contractor, the CC will be notified of the need for the Claims Agent.

   If the Contractor cannot resolve the issue then Operations will respond and bill the labor and equipment hours as well as materials used to the project's work order, as directed by the CC claims process.

   The CC will document and record all interactions in SAP and within the Customer Interaction Center Zero (CIC0) throughout the entire event.

2. If Engineering is notified from any source (customer, inspector, other) of a problem in the field then Engineering will notify the CC of the address and the issue. Engineer will then notify Contractor and their claims agent to begin process. CC and/or Claims Agent will only document interaction within CIC0 and make sure CWP contractor utilizes their insurance claims process throughout. The CC will dispatch the Claims Agent to the location to begin to process the issue. This will facilitate the flow of information in case the customer calls back the CC at a later point in time.

3. If the Inspector is onsite and a problem occurs that affects an infrastructure or a customer, the Inspector will notify the CC of the issue and whether any further action is required and if it warrants the need for CC Claims Agent.

   The CC will notify Engineering and acknowledge the Claims Agent has been contacted and is in route to the site with an estimated time of arrival.

4. If a bypass of sewage occurs at a Contractor’s jobsite, the Engineering department will make the necessary notifications and file all necessary reports. Copies of the bypass report will be sent via email to the required distribution list, including Operations, CC and EH&S.

During Off Hours (nights, weekends or holidays)

1. The CC will follow normal procedures and dispatch a Shift Maintainer to investigate. If the problem is determined to be infrastructure damage or a claim issue, the CC will dispatch the Claims Agent and the Project Manager and or Field Engineer will then be notified.

   If, after the CC Claims Agent or Shift Maintainer investigates, the CC determines there is a major issue requiring immediate attention, the CC will notify the Project Manager, Field Engineer or Inspector. MDC Operations will respond and work to resolve the issue or problem in the field as required, unless contractual obligations require the Contractor to rectify the problem. In this instance, the Contractor must respond within 2 hours of being notified. The Contractor is obligated to relieve MDC Operations staff of their emergency response duties and assume responsibility for the full operation until the repair/fix is completed.

   In the event the contractor does not respond within 2 hours, the claim will be handled by the Claims Department. All MDC labor and equipment hours as well as materials used will be billed to a specific bill job work order created by the CC. This work order will be reconciled to the project funding.

2. Regardless of whom is responsible for performing the work (MDC Operations or the Contractor), the Project Manager will issue an Emergency Action Plan detailing the scope of the work and primary contact responsibilities.

   The CC and/or Claims Agent will document all interactions within ClC0.

SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials and equipment and perform all work required for prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water and land, and involves management of water discharges, air emissions, noise, hazardous materials and solid waste, as well as other pollutants.

C. Schedule and conduct all work in a manner that will minimize erosion of soils in the areas of work. Provide erosion and sedimentation control measures such as, but not limited to temporary and permanent mulching, dust control, vegetative protection and cover, sediment barriers, slope stabilization, diversions, or other special surface treatments as required to prevent erosion and subsequent sedimentation and muddying of streams, rivers, wetlands, impoundments, ponds, lakes, etc. All measures shall be in place prior to any construction activity.

D. This Section is intended to ensure that construction is achieved with minimum disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.

E. All phases of erosion and sedimentation control shall comply with, and be subject to, the approval of the U.S. Environmental Protection Agency (EPA), the Connecticut Department of Energy and Environmental Protection and the host municipality, as further described herein. Prepare an erosion and sedimentation control plan with drawings meeting the requirements for approval by those agencies. Upon approval, furnish two copies of the approved Drawings to the Engineer for information purposes only.

1.2 RELATED WORK

A. Section 01060 – Regulatory Requirements

B. Section 01100 - Special Provisions

C. Section 01562 – Dust Control

D. Section 02011- Test Pits

E. Section 02053 - Removal and Disposal of Existing Pipes, Manholes, and Appurtenances.

F. Section 02110 - Contaminated Soil Excavation

G. Section 02140 – Dewatering and Drainage

H. Section 02145 – Handling Contaminated Groundwater

I. Section 02150 – Bypass Pumping, Handling Storm Runoff, and Sanitary Sewage Flows

J. Section 02260 – Handling, Transportation and Disposal of Regulated Soil

K. Section 02270 – Sedimentation and Erosion Control

1.3 APPLICABLE REGULATIONS

A. Comply with all applicable Federal, State and local laws, regulations and permits, concerning environmental pollution control, abatement and construction. This requirement applies to all laws regulations and permits referenced in these specifications as well as any other laws, regulations or permits not specifically referenced that apply to this construction activity .

B. At a minimum, comply with requirements set forth by the Army Corps of Engineers, Connecticut Department of Energy and Environmental Protection, the Owner and the Town of Windsor, CT.

1.4 NOTIFICATIONS

A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and will advise the Contractor to develop proposed corrective measures to be taken. Federal, State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any

non-compliance with Federal, State or local requirements. After receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of time lost due to stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor, unless it is later determined that the Contractor was in compliance.

1.5 IMPLEMENTATION

A. Prior to commencement of work, meet with the Engineer to develop mutual understandings relative to compliance with these provisions and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when approved by the Engineer and incorporate permanent control features into the project at the earliest practicable time.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 EROSION AND SEDIMENT CONTROL

A. Provide positive means of erosion and sediment control such as, but not limited to, shallow ditches to divert runoff around active construction areas and to carry off surface water. Control measures, such as siltation basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Flow of surface water into excavated areas shall be prevented. Water resulting from dewatering of excavated areas shall be filtered using appropriate best management practices (BMPs) prior to discharge to ditches around construction area. At the completion of the work, ditches shall be backfilled and the ground surface restored to original condition.

3.2 PROTECTION OF STREAMS AND SURFACE WATERS

A. Take precautions to prevent, or reduce to a minimum, damage to any stream or surface water from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near streams and surface waters. Water that has been used for washing or processing, or that contains oils or sediments, and stormwater that will

reduce water quality of receiving waters, shall not be directly returned to streams or other surface waters. Divert such waters through a settling basin, filter or appropriate BMP before being directed into streams or surface waters.

B. Do not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.

C. Take preventative measures to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the Engineer and the Connecticut Department of Energy and Environmental Protection. Submit two copies of approved contingency plans to the Engineer for information purposes only.

D. Water being flushed from potable water structures or pipelines after disinfection, with a Cl_2 residual of 2 mg/l or greater, shall be treated with a dechlorination solution, in a method approved by the Engineer, prior to discharge.

3.3 PROTECTION OF LAND RESOURCES

A. Restore land resources within the project boundaries and outside the limits of permanent work to a condition that, after completion of clean-up, will approximate pre-construction conditions, appear to be natural, and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings. Complete project restoration activities depicted on project drawings shall be implemented.

B. Outside of areas requiring earthwork for the construction of the new facilities, do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage. Where special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.

C. Before beginning operations near them, protect trees that may possibly be defaced, bruised, injured, or otherwise damaged by the construction equipment, dumping or other operations, by installing boards, planks, or poles around trunks to protect against damage. Monuments and markers shall be protected similarly.

D. Any trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to their original condition. The Engineer will decide the method of restoration to be used and whether damaged trees shall be treated and healed or removed and disposed of. If requested by the Engineer or Owner, a CT certified arborist shall conduct an inspection of damaged trees and submit recommendations for any tree repair to the Contractor. Should the services of a certified arborist be required due to tree damage caused by the Contractor, the cost for the certified arborist shall be the responsibility of the Contractor and not reimbursed by the Owner.

1. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-in in diameter shall be coated as soon as possible with an approved tree wound dressing unless otherwise directed by the Engineer. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.

2. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed and replaced.

E. The locations of the Contractor's access and parking areas, storage and staging areas and other facilities required temporarily in the performance of the work, shall be existing paved or cleared areas on the job site, or other areas to be cleared as shown on the Drawings and approved by the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites. Drawings showing above items shall be submitted for approval of the Engineer.

F. If the Contractor proposes to construct temporary roads or embankments or excavations for building and/or work areas, he shall submit the following for approval at least ten days prior to scheduled start of such temporary work.

1. A layout site plan and details of all temporary roads, excavations, embankments and drainage to be constructed within the work area.

2. Details of temporary road construction.

3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.

4. A stamped landscaping drawing prepared by a registered professional engineer or landscape architect in the State of Connecticut showing the proposed restoration of the area. Indicate the proposed removal of any trees and shrubs outside the limits of existing clearing area. Indicate locations of guard posts or barriers required to control vehicular traffic and protect trees and shrubs to be maintained undamaged. The Drawing shall show complete removal of apparent construction related work and shall provide for a natural appearing final condition of the area. No unauthorized road construction, excavation or embankment construction including disposal areas will be permitted.

G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess materials, or any other vestiges of construction. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as described in other Sections of this specification.

H. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner, and in compliance with applicable federal, state and local regulations.

3.4 PROTECTION OF AIR QUALITY

A. Burning - The use of burning at the project site for the disposal of refuse and debris will not be permitted.

B. Dust Control - Maintain all excavations, embankments, stockpiles, access roads, building sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which could cause standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.

C. An approved method of dust control on exposed soil shall consist of wetting exposed soil with water. The use of petroleum products and/or calcium chloride is prohibited. However, calcium chloride may be used, if approved, to control dust on paved surfaces or sidewalks.

D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times to prevent the generation of dust, and the Contractor shall have sufficient competent equipment on the job to accomplish this task. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

3.5 NOISE CONTROL

A. Make every effort to minimize noises caused by the construction operations. Equipment shall be operated and equipped with silencers or mufflers designed to operate with the least possible noise.

B. Contractor will be required to comply with the Town of Windsor Noise regulations. Such regulations as provided at the end of this specification section.

C. The Owner will secure a waiver from the Town of Windsor for noise regulations for approved and required night time Work.

3.6 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

A. Maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out, or until the material concerned has become stabilized to the extent that pollution is no longer being created.

3.7 TREE AND PLANT PROTECTION

A. Contractor shall protect existing trees, shrubs and plants on or adjacent to the site that are shown or designated to remain in place against unnecessary cutting, breaking or skinning of trunk, branches, bark or roots.

B. Materials or equipment shall not be stored or parked within the drip line.

C. Temporary fences or barricades shall be installed to protect trees and plants in areas subject to traffic.

D. Fires shall not be permitted under or adjacent to trees and plants.

E. Within the limits of the Work, water trees and plants that are to remain, in order to maintain their health during construction operations.

F. Cover all exposed roots with burlap that shall be kept continuously wet. Cover all exposed roots with earth as soon as possible. Protect root systems from mechanical damage and damage by erosion, flooding, run-off or noxious materials in solution.

G. If branches or trunks are damaged, prune branches immediately and protect the cut or damaged areas with emulsified asphalt compounded specifically for horticultural use in a manner approved by the Engineer.

H. All damaged trees and plants that die or suffer permanent injury shall be removed when ordered by the Engineer and replaced by a specimen of equal or better quality.

3.8 POLLUTION CONTROL

A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.

B. Provide equipment and personnel, perform emergency measures required to contain any spillages, and to remove contaminated soils or liquids.

1. Contaminated soils and liquids shall be stored, transported, and disposed of in accordance with local, State, and federal regulations and this contract.

C. Care shall be taken to prevent, or reduce to a minimum, damage to any water resource from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such waters. Water that has been used for washing or processing, or that contains oils or sediments that will reduce water quality shall be diverted through an oil/water separator or filter before being discharged.

D. No materials shall be dispersed or stockpiled in any wetland area. No excavated materials or materials to be used in backfilling shall be deposited within 100 feet of any watercourse, wetland area, or drainage facility without prior approval from the Engineer and regulatory agencies.

E. The storage of fuel oil and refueling of equipment shall be restricted to designated areas approved by the Engineer and appropriate regulatory agencies.

F. The removal and disposal fuel, lubricants, grease, and other operating fluids from equipment designated for demolition or to be removed shall be done in accordance with current federal, state, and local regulations.

G. Contractor shall not locate his storage of equipment and materials within 100 feet of wetland boundaries or floodplains.

H. All debris and excess material will be disposed of outside the boundaries of wetland or floodplain areas in an environmentally sound manner as determined by the federal, state, and local regulations.

H. Take special measures to prevent harmful substances from entering public waters.

1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.

I. Provide systems for control of atmospheric pollutants.

1. Prevent toxic concentrations of chemicals.

2. Prevent harmful dispersal of pollutants into the atmosphere.

J. All Contractor's equipment used during construction shall conform to all current federal, state and local laws and regulations.

3.9 SIGNIFICANTLY IMPORTANT ARCHAEOLOGICAL AREAS

A. For the Contractor's information, the Engineer has no information suggesting that the Project sites are of archaeological significance. However, Connecticut CWF guidelines require text relating to archaeology to be included in CWF-funded project documents.

B. Should the Contractor or Engineer discover evidence of remains or other items of archaeological significance, Contractor shall report these findings to 1.Owner, 2. Local Historical Society, 3. Connecticut Historical Commissioner 860-566-3005 and 4. Resident Engineer or Inspector, and shall exercise the utmost care to ensure that these areas remain undisturbed. Contractor shall allow recovery of such finds by the authorities, shall not remove such artifacts under penalty of law, and shall prevent construction or private vehicles from crossing over these areas. In addition, when directed by the Engineer, cover these areas with 1-ft common fill to the limits directed by the Engineer.

3.10 SUPPLEMENTS

A. The Supplements listed below are part of this Specification:

1. Windsor Noise Ordinance.
    a. Windsor Code of Ordinances.
       http://www.amlegal.com/windsor_ct/

END OF SECTION

ARTICLE III. NOISE CONTROL*

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***Cross references:** Buildings; construction; related activities, Ch. 3; explosives, ammunition and blasting agents, § 6-80 et seq.; alarm systems, § 12-20 et seq.; planning and zoning, Ch. 14; zoning, App. A.

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Sec. 9-30. Definitions.

The following definitions shall apply in the interpretation and enforcement of this article:

Ambient noise or background noise: Shall mean noise of a measurable intensity which exists at a point as a result of a combination of many distant sources individually indistinguishable. In statistical terms, it is the level which is exceeded ninety (90) per cent of the time (L90) in which the measurement is taken.

Chief of police: Shall mean the Chief of Police of the Town of Windsor or a duly authorized officer subject to his orders.

Commercial zone: Shall mean all business zones (B-1, B-2, B-3) and professional zone, as defined in the zoning regulations of the Town of Windsor, and all uses associated therewith, either permitted as a right or as a special use.

Construction: Shall mean any site preparation, assembly, erection, substantial repair, alteration, or similar action, but excluding demolition, for or of public or private rights-of-way, structures, utilities, or similar property.

Construction equipment: Shall mean any equipment or device operated by fuel or electric power, used in construction or demolition work.

Day: Shall mean the hours between 7:00 a.m. and 10:00 p.m., Monday through Saturday, and the hours 9:00 a.m. through 10:00 p.m. on Sundays.

Decibel: Shall mean a logarithmic unit of measure used in measuring magnitudes of sound. The symbol is dB.

Demolition: Shall mean any dismantling, intentional destruction or removal of structures, utilities, public or private right-of-way surfaces or similar property.

Domestic power equipment: Shall mean, but not be limited to, power saws, drills, grinders, lawn and garden tools and other domestic power equipment intended for use in residential areas by a homeowner.

Emergency: Shall mean any occurrence or set of circumstances involving actual or imminent physical trauma or property damage, which demands immediate action.

Emergency vehicle: Shall mean any motor vehicle authorized by the Town of Windsor to have sound warning devices, such as sirens and bells, which can lawfully be used when responding to an emergency.

Emergency work: Shall mean work made necessary to restore property to a safe condition following an emergency, or work required to protect persons or property from exposure to imminent danger.

Impulse noise: Shall mean sound of short duration, usually less than one second, with an abrupt onset and rapid decay.

Industrial zone: Shall mean all industrial (I-1 and I-2), wholesale and storage, and restricted commercial zones, as defined in the zoning regulations of the Town of Windsor, and all uses associated therewith, either permitted as a right or as a special use.

Motor vehicle: Shall be defined as per Section 14-1(26) of the Connecticut General Statutes.

Muffler: Shall mean a device for abating sounds such as escaping gases.

Night: Shall mean the hours between 10:00 p.m. and 7:00 a.m., Sunday evening through Saturday morning, except, that night shall mean the hours between 10:00 p.m. Saturday and 9:00 a.m. Sunday.

Noise: Shall mean any sound, the intensity of which exceeds the standards set forth in section 9-32 of this article.

Noise level: Shall mean the sound pressure level as measured with a sound level meter using the A-weighting network. The level so read is designated dB(A) or dBA.

Person: Shall mean any individual, firm, partnership, association, syndicate, company, trust, corporation, municipality, agency, or political or administrative subdivision of the state or other legal entity of any kind.

Premise: Shall mean any building, structure, land, or portion thereof, including all appurtenances, and shall include yards, lots, courts, inner yards, and real properties without buildings or improvements, owned or controlled by a person. The emitter's premise includes contiguous publicly dedicated street and highway rights-of-way, all road rights-of-way and waters of the state.

Property line: Shall mean that real or imaginary line along the ground surface and its vertical extension which:

(a) Separates real property owned or controlled by any person from contiguous real property owned or controlled by another person; and

(b) Separates real property from the public right-of-way.

Public right-of-way: Shall mean any street, avenue, boulevard, highway, sidewalk, alley, park, waterway, railroad or similar place which is owned or controlled by a governmental entity.

Recreational vehicle: Shall mean any internal combustion engine powered vehicle which is being used for recreational purposes.

Residential zone: Shall mean all residential (AA, A, R-13, R-11, R-10, and R-8), NZ (public and quasi-public), PUD (planned urban development), and agricultural zones, as defined in the zoning regulations of the Town of Windsor, and all uses associated therewith, either permitted as a right or as a special use.

Sound: Shall mean a transmission of energy through solid, liquid, or gaseous media in the form of vibrations which constitute alterations in pressure or position of the particles in the medium and which, in air, evoke physiological sensations, including, but not limited to, an auditory response when impinging on the ear.

Sound level meter: Shall mean an instrument used to take sound level measurements and which should conform, as a minimum, to the operational specifications of the American National Standards Institute for Sound Level Meters S1.4--1971 (Type S2A).

Sound pressure level: Shall mean twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of a sound to the reference pressure of twenty (20) micronewtons per square meter (20×10^{-6} Newtons/meter^2), and is expressed in decibels (dB).

(Ord. No. 82-4, 6-21-82)

Sec. 9-31. Noise level measurement procedures.

For the purpose of determining noise levels as set forth in this article, the following guidelines shall be applicable:

(1) All personnel conducting sound measurements shall be trained in the current techniques and principles of sound-measuring equipment and instrumentation;

(2) Instruments used to determine sound level measurements shall conform to the sound level meters, as defined by this article;

(3) The general steps listed below shall be followed when preparing to take sound level measurements:

(a) The instrument manufacturer's specific instructions for the preparation and use of the instrument shall be followed;

(b) The sound level meter shall be calibrated before and after each set of measurements;

(c) When measurements are taken out-of-doors, a wind screen shall be placed over the microphone of the sound level meter, as per the manufacturer's instructions;

(d) The sound level meter shall be placed at an angle to the sound source, as specified by the manufacturer's instructions, and at least four (4) feet above the ground. It shall be so placed as not to be interfered with by individuals conducting the measurements;

(e) Measurements shall be taken at a point that is located about one foot beyond the

boundary of the emitter's premise within the receptor's premise. The emitter's premise includes his/her individual unit of land or group of contiguous parcels under the same ownership as indicated by public land records;

(4) The recommended practices for determining statistical noise levels shall be those as outlined in the document entitled Connecticut Noise Survey Data Form #101.

(Ord. No. 82-4, 6-21-82)

Sec. 9-32. Noise levels.

(a) It shall be unlawful for any person to emit or cause to be emitted any noise beyond the boundaries of his/her premise in excess of the noise levels established in these regulations.

(b) Noise level standards:

(1) No person in a residential zone shall emit noise beyond the boundaries of his/her premise exceeding the levels stated herein and applicable to adjacent residential, commercial or industrial zones:

Emitter's Zone:

Residential

Receptor's Zone: Maximum Level:

Industrial . . . 62 dBA

Commercial . . . 55 dBA

Residential/Day . . . 55 dBA

Residential/Night . . . 45 dBA

(2) No person in a commercial zone shall emit noise beyond the boundary of his/her premise exceeding the levels stated herein and applicable to adjacent residential, commercial or industrial zones:

Emitter's Zone:

Commercial

Receptor's Zone: Maximum Level:

Industrial . . . 62 dBA

Commercial . . . 62 dBA

Residential/Day . . . 55 dBA

Residential/Night . . . 45 dBA

(3) No person in an industrial zone shall emit noise beyond the boundary of his/her premise exceeding the levels stated herein and applicable to adjacent residential, commercial or industrial zones:

Emitter's Zone:

Industrial

Receptor's Zone: Maximum Level:

Industrial . . . 70 dBA

Commercial . . . 66 dBA

Residential/Day . . . 61 dBA

Residential/Night . . . 51 dBA

(c) High background noise levels and impulse noise:

(1) In those individual cases where the background noise levels caused by sources not subject to these regulations exceed the standards contained herein, a source shall be considered to cause excessive noise if the noise emitted by such source exceeds the background noise levels by five (5) dBA, provided that no source subject to the provisions of this article shall emit noise in excess of eighty (80) dBA at any time, and provided that this section, does not decrease the permissible levels of other sections of this article.

(2) No person shall cause or allow the emission of impulse noise in excess of eighty (80) dB peak sound pressure level during the nighttime to any residential noise zone.

(3) No person shall cause or allow the emission of impulse noise in excess of one hundred (100) dB peak sound pressure level at any time to any zone.

(d) Exclusions: These levels shall not apply to noise emitted by or related to:

(1) Natural phenomena;

(2) Any bell or chime from any building clock, school, or church;

(3) Any siren, whistle, or bell lawfully used by emergency vehicles or any other alarm systems used in an emergency situation; provided, however, that burglar alarms not terminating with thirty (30) minutes after being activated shall be unlawful;

(4) Warning devices required by OSHA or other state or federal safety regulations;

(5) Farming equipment or farming activity.

(e) Exemptions: The following shall be exempt from these regulations, subject to special

conditions as spelled out:

(1) Noise generated by any construction equipment which is operated between the hours of 7:00 a.m. and 9:00 p.m., provided that the operation of construction equipment between the hours of 9:00 p.m. and 7:00 a.m. shall not exceed the maximum noise levels as specified in section 9-32(b);

(2) Noise created as a result of, or relating to an emergency;

(3) Noise from domestic power equipment such as, but not limited to, power saws, sanders, grinders, lawn and garden tools or similar devices operated between the hours of 7:00 a.m. and 9:00 p.m., Monday through Saturday, and between the hours of 9:00 a.m. and 9:00 p.m. on Sundays;

(4) Noise from snow removal equipment;

(5) Noise from demolition work conducted between the hours of 7:00 a.m. and 9:00 p.m., provided that when considered emergency work, demolition shall be exempted at all times from the noise levels set in this regulation;

(6) Noise created by any aircraft flight operations which are specifically preempted by the Federal Aviation Administration;

(7) Noise created by any recreational activities which are permitted by law and for which a license or permit has been granted by the town, including but not limited to parades, sporting events, concerts and firework displays;

(8) Noise created by blasting other than that conducted in connection with construction activities shall be exempted, provided that the blasting is conducted between 8:00 a.m. and 5:00 p.m., local time, at specified hours previously announced to the local public, or provided that a permit for such blasting has been obtained from local authorities;

(9) Noise created by aircraft, or aircraft propulsion components designed for or utilized in the development of aircraft, under test conditions;

(10) Noise created by products undergoing tests, where one of the primary purposes of the test is evaluation of product noise characteristics and where practical noise control measures have been taken;

(11) Noise generated by transmission facilities, distribution facilities and substations of public utilities providing electrical power, telephone, cable television or other similar services and located on property which is not owned by the public utility and which may or may not be within utility easements.

(Ord. No. 82-4, § 6-21-82)

Sec. 9-33. Prohibited noise activities.

The following activities are prohibited:

(1) *Vehicle horns:* No person shall at any time sound any horn or other audible signal device of a motor vehicle, unless it is necessary as a warning to prevent or avoid a traffic accident;

(2) *Truck idling:* No person shall operate an engine of any standing motor vehicle with a weight in excess of ten thousand (10,000) pounds manufacturer's gross vehicle weight (GVW) for a period in excess of ten (10) minutes, when such vehicle is parked on a residential premise or on a town road next to a residential premise;

(3) *Exhaust discharge:* No person shall discharge into the ambient air the blow-down of any steam vent of the exhaust of any stationary internal combustion engine or air compressor equipment, unless such discharge be through a muffler as defined by section 9-30 of this article or through an apparatus providing equal noise reduction.

(Ord. No. 82-4, 6-21-82)

Sec. 9-34. Motor vehicle noise.

(a) All motor vehicles operated within the limits of the Town of Windsor shall be subject to the noise standards and decibel levels as found in Title 14, Section 14-80a-1 through 14-80a-18 of the Connecticut State Statutes.

(b) No sound amplifying devices on or within motor vehicles shall emit noise in excess of the noise levels as specified in section 9-32(b).

(Ord. No. 82-4, 6-21-82)

Sec. 9-35. Recreational vehicle noise.

(a) No person shall create or cause to be created any unreasonably loud or disturbing noise due to the operation of a recreational vehicle. A noise shall be deemed to be unreasonably loud and violation of this article under the following circumstances:

(1) When the noise so generated exceeds the noise level standards as set forth in section 9-32; and

(2) Recreational vehicles shall also be in violation of this article if operated within a premise within one hundred (100) feet of the property line.

(Ord. No. 82-4, 6-21-82)

Sec. 9-36. Inspections.

(a) For the purpose of determining compliance with the provisions of this article, the chief of police or his designated representative is hereby authorized to make inspections of all noise sources and to take measurements and make tests, whenever necessary, to determine the quantity and character of noise. In the event that any person refuses or restricts entry and free access to any part of a premise, or refuses inspection, testing or noise measurement of any activity, device, facility, or process where inspection is sought, the chief of police or his designated representative may seek from the appropriate court a warrant, without interference, restriction or obstruction, at a reasonable time, for the purpose of inspecting, testing or

measuring noise.

(b) It shall be unlawful for any person to refuse to allow or permit the chief of police or his designated representative free access to any premise, when the chief of police or his designated representative is acting in compliance with a warrant for inspection and order issued by the appropriate court.

(c) It shall be unlawful for any person to violate the provisions of any warrant or court order requiring inspection, testing or measurement of noise sources.

(d) No person shall hinder, obstruct, delay, resist, prevent in any way, interfere or attempt to interfere with any authorized person while in the performance of his/her duties under this article.

(Ord. No. 82-4, 6-21-82)

Sec. 9-37. Penalties.

Any person in violation of any of the provisions of this article shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined in an amount not to exceed twenty-five dollars ($25.00). Each day such violation continues after the time for correction of the violation has been given in an order, shall constitute a continuing violation and the amount of the fine shall be fifty dollars ($50.00) for each day said violation continues.

(Ord. No. 82-4, 6-21-82)

Sec. 9-38. Variance.

(a) Any person living or doing business in Windsor may apply to the chief of police for a variance from one or more of the provisions of this article, which are more stringent than the Connecticut Department of Environmental Protection regulations for the control of noise, providing that the applicant supplies all of the following information to the chief of police at least twenty (20) days prior to the start of said activity:

(1) The location and nature of the activity;

(2) The time period and hours of operation of said activity;

(3) The nature and intensity of the noise that will be generated; and,

(4) Any other information required by the chief of police.

(b) No variance from these regulations shall be issued unless it has been demonstrated that:

(1) The proposed activity will not violate any provisions of the Connecticut Department of Environmental Protection regulations;

(2) The noise levels generated by the proposed activity will not constitute a danger to the public health; and,

(3) Compliance with the regulations constitutes an unreasonable hardship on the applicant.

(c) The application for variance shall be reviewed and either approved or rejected at least five (5) days prior to the proposed start of said activity. The approval or rejection shall be in writing and shall state the condition of approval, if any, or the reasons for rejection.

(d) Failure to rule on the application in the designated time shall constitute approval of the variance.

(Ord. No. 82-4, 6-21-82)

Sec. 9-39. Contracts.

Any written agreement, purchase order or contract, whereby the Town of Windsor is committed to an expenditure of funds in return for work, labor, services, supplies, equipment, materials or any combination thereof, shall not be entered into unless such agreement, purchase order or instrument contains provisions that any equipment or activities which are subject to the provisions of this article will be operated, constructed, conducted or manufactured without violating the provisions of this article.

(Ord. No. 82-4, 6-21-82)

SECTION 01120b

Site Specific Health and Safety Plan

PART 1 - GENERAL

1.01 SCOPE OF WORK.

A. Work under this section consists of the development and implementation of a site specific Health and Safety Plan (HASP) for proposed construction activities anticipated to occur within the project limits. Certain project activities or site conditions may pose safety, chemical, biological and/or physical hazards that may require specialized expertise to address, control and/or eliminate these hazards.

B. The Contractor shall be responsible for the preparation of a Health and Safety Plan that addresses the relative risk of exposure to potential hazards present within the project area for all workers, including Owner employees. The HASP shall establish health and safety protocols that address the relative risks of exposure to hazardous materials in accordance with Title 29 of the Code of Federal Regulations, Part 1926 (29 CFR 1926), “Safety and Health Regulations for Construction.” Such protocols shall only address those concerns directly related to site conditions. The plan may require revisions should additional environmental hazards be identified.

C. Any disregard for the provision of these Health and Safety requirements may be deemed just and sufficient cause for termination of the Contract without compromise or prejudice to the rights of the Contractor.

D. The requirements set forth herein pertain to the provisions of workers' health and safety as it relates to proposed construction. Worker health and safety protocols which address potential and/or actual risk of exposure to site-specific hazards posed to the Contractor's employee are solely the responsibility of the Contractor.

E. The Contractor shall be responsible for the implementation of the HASP throughout the performance of work within the project area, and in other areas where site conditions may pose a risk to worker health and safety and/or the environment. No physical aspect of the work shall begin until a HASP is submitted and accepted by the Engineer. However, the contract time will begin on the date stipulated in the Notice to Proceed.

1.02 REFERENCED STANDARDS AND REGULATIONS

A. Pertinent provisions of the following listed and other relevant standards shall apply to the work under this Section of the Specifications, except as they may be

modified herein. The work performed under this Contract shall comply with all applicable Federal, State, and local health and safety requirements. This includes, but is not limited to, the most current version of the following:

1. Occupational Safety and Health Administration (OSHA) General Industry Standards, 29 CFR 1910 and Construction Industry Standard 29 CFR 1926.

2. Construction Industry Standards 29 CFR 1926, Section 65 "Hazardous Waste Site Operations and Emergency Response"

3. Environmental Protection Agency (EPA) Hazardous Waste Requirements, 40 CFR 260-270

4. Connecticut Department of Energy and Environmental Protection (CT DEEP) Hazardous Waste Regulations, RSCA 22a-449(c), Section 1-42

B. The matter of interpretation of standards shall be submitted to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations and referenced documents vary, the most stringent requirements shall be followed.

1.03 SPECIAL REQUIREMENTS

A. The Contractor shall have a site specific Health and Safety Plan developed by a qualified person designated by the Contractor. This qualified person shall be a Certified Industrial Hygienist (CIH) or a Certified Safety Professional (CSP). The qualified individual proposed to serve as the Health and Safety Manager (HSM) shall be the Contractor's internal review and acceptance authority for the HASP.

B. The Contractor shall provide a Health and Safety Officer (HSO) on the project site who is capable of identifying existing and potential hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate or control them. The HSO shall have full authority to implement and ensure compliance with the HASP. The qualifications of the HSO shall include:

1. Completion of OSHA 40-hour HAZWOPER training and 8-hour HAZWOPER supervisory training;

2. A minimum of one (1) year of working experience at hazardous waste sites;

3. A working knowledge of Federal and State safety regulations;

4. Specialized training or documented experience (one year minimum) in personal and respiratory protective equipment program implementation, and

the proper use of air monitoring instruments, air sampling methods and procedures; and,

5. Certification training in first aid and CPR by a recognized approved organization such as the American Red Cross.

C. The primary duties of the HSO shall be those associated with worker health and safety. The Contractor's HSO responsibilities shall be detailed in the written HASP and shall include, but not be limited to, the following:

1. Directing and implementing the HASP.

2. Ensuring that all project personnel have been adequately trained in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury (29 CFR 1926.21). All personnel shall be adequately trained in procedures outlined in the Contractor's written HASP.

3. Authorizing Stop Work Orders that shall be executed upon the determination of an imminent health and safety concern.

4. Contacting the Contractor's HSM and the Engineer immediately upon the issuance of a Stop Work Order when the HSO has made the determination of an imminent health and safety concern.

5. Authorizing work to resume, upon approval from the Contractor's HSM.

6. Directing activities, as defined in the Contractor's written HASP, during emergency situations.

7. Provide monitoring as identified in the HASP.

1.04 SUBMITTALS

A. The documents identified below shall be submitted to the Engineer. The Contractor shall not be allowed to commence work activities where site conditions exist that may pose a risk to worker health and safety and/or the environment, until such time as the HASP has been reviewed and accepted by the Engineer and the Owner’s Environment Health and Safety Department (EH&S). However, the contract time will begin on the date stipulated in the Notice to Proceed.

B. A site-specific HASP prepared by or, at a minimum, reviewed by a CIH or CSP and bearing the signature of said CIH or CSP indicating that the HASP meets the minimum requirements of 29 CFR 1910.120 and 29 CFR 1926.65. The submittal shall carry the following certification:

"This site specific Health and Safety Plan, to the best of my knowledge, meets the applicable OSHA standards, the project specifications and industry standards for good health and safety practices. Further, the HASP provides both organizational responsibilities and employee procedures to ensure that work can be conducted safely and effectively."

C. Submit the HASP and specialized subcontractor's HASP(s), if applicable, to the Engineer for review and acceptance. The Engineer and EH&S shall review the HASP(s) within four (4) weeks of submittal and shall provide written comments as to deficiencies in and/or exceptions to the plan(s), if any, to ensure consistency with applicable standards, policies and practices and appropriateness given potential or known site conditions.

   Acceptance of the HASP by the Engineer and EH&S does not ensure total compliance with OSHA or that all written hazard assessments and control procedures are adequate for all activities, contingencies and occurrences that may arise on this project. The preparation of a Health and Safety Plan that addresses the relative risk of exposure to potential hazards present within the project area for all workers, including Owner employees, remains the sole responsibility of the Contractor. The review by the Owner is only to determine if the HASP meets the basic regulatory requirements and the minimum requirements of this section. If the Engineer takes exception to portions of the Contractor's HASP that cannot be revised, said exception shall be documented in writing prior to initiation of work efforts.

D. Prior to the initiation of any construction activities in which contact with controlled materials is likely, submit a list of personnel expected to be engaged in site activities and certify that said personnel have completed the educational requirements stipulated in 29 CFR 1910.120 and 29 CFR 1926.65, are currently monitored under a medical surveillance program in compliance with those regulations, and that they are fit for work under Level C conditions.

E. The Contractor shall submit for review the qualifications of the individual proposed to serve as the Health and Safety Officer. The HSO shall have full authority to carry out and ensure compliance with the HASP.

1.05 SITE-SPECIFIC HASP PROVISIONS

A. The HASP shall be recognized as a flexible document, which shall be subject to revisions and amendments, as required, in response to actual site conditions, changes in work methods, and/or alterations in the relative risk present. Revisions shall require the re-submittal of the HASP for review and acceptance by the Engineer and EH&S prior to implementation of such changes, and work cannot commence in areas requiring revision to the HASP.

B. The HASP maintained on site by the Contractor shall be kept current with construction activities and actual on-site conditions.

C. The following details specific provisions that, at a minimum, shall apply to work conducted under this Contract:

1. Contractor's Responsibility: The Contractor shall implement and maintain the HASP throughout the performance of work. In areas identified as having a potential risk to worker health and safety and in any other areas deemed appropriate by the HSO, the Contractor shall be prepared to immediately implement the appropriate health and safety measures, including but not limited to the use of personal protective equipment (PPE).

2. Subcontractors and/or specialized contractors may provide their own management personnel and/or HSO for work they have been retained to perform at no additional cost to the Owner. The Contractor shall inform all Subcontractors of all site safety rules, known or potential hazards and emergency response contingencies. The Contractor shall be responsible for all Subcontractors conformance with the HASP.

3. If deficiencies in the Contractor's operations are observed by the Engineer, Construction Inspector or EH&S, they shall be assembled in a written field directive and given to the Contractor. The Contractor shall immediately correct the deficiencies and respond, in writing, how each was corrected. Failure to bring the work area(s) and implementation procedures into compliance will result in a written Stop Work Order directive to discuss an appropriate resolution(s) to the matter. When the Contractor demonstrates compliance, the Engineer shall remove the Stop Work Order. If a Stop Work Order has been issued for cause, no delay claims on the part of the Contractor will be honored.

D. Safety and Health Program

1. OSHA standard 29 CFR 1910.120(b)/1926.65(b) requires employers to develop and implement a written Safety and Health Program for their employees involved in hazardous waste operations. The HASP shall interface with the employer's Health and Safety Program. Any portions of the Safety and Health Program that are referenced in the HASP shall be included as appendices to the HASP. All topics regulated by 29 CFR 1910.120(b) (4) and those listed below shall be addressed in the Health and Safety Program:

   a. Statement of Safety and Health Policy
   b. Site Description and Contamination Characterization
   c. Safety and Health Risk Analysis
   d. Activity Hazard Analyses
   e. Staff Organization, Qualifications, and Responsibilities

f. Employee Training Assignments
g. Personal Protective Equipment (PPE)
h. Medical Surveillance Program
i. Exposure Monitoring/Air Sampling Program
j. Heat/Cold Stress Monitoring
k. Standard Operating Safety Procedures, Engineering Controls and Work Practices
l. Site Control Measures
m. Personal Hygiene and Decontamination
n. Equipment Decontamination
o. Emergency Equipment and First-Aid Requirements
p. Emergency Response Plan
q. Spill Containment Program
r. Logs, Reports, and Record Keeping
s. Inspection/Audits
t. Confined Space Entry Procedures
u. Excavation Safety
v. Map indicating route to hospital
w. Emergency contact list
x. Work zone safety
y. Accident reporting

E. Site Specific HASP Requirements

1. General Requirements for Preparation and Implementation: The Contractor shall prepare a site specific HASP covering all on-site work regulated by 29 CFR 1910.120(b)/1926.65(b) to be performed by the Contractor and all subcontractors and Owner employees under this contract. The Contractor shall be responsible for the development, implementation and oversight of the HASP. The HASP shall establish in detail the protocols necessary for the recognition, evaluation, and control of all hazards associated with each task performed under this contract. The HASP shall address site-specific health and safety requirements and procedures based upon site-specific conditions. The level of detail provided in the HASP shall be tailored to the type of work, complexity of operations to be performed, and hazards anticipated. Details about some activities may not be available when the initial HASP is prepared and submitted. Therefore, the HASP shall address, in as much detail as possible, all anticipated tasks, their related hazards, and anticipated control measures.

2. The Contractor shall maintain a copy of the written Safety and Health Program and HASP on site. As work proceeds, the HASP shall be adapted to new situations and new conditions. All changes and modifications to the HASP shall be signed by the Contractor's HSM. Should any unforeseen hazard become evident during the performance of the work, the HSO shall

bring such hazard to the attention of the Contractor and the Engineer as soon as possible. In the interim, the Contractor shall take necessary action to re-establish and maintain safe working conditions in order to safeguard on-site personnel, visitors, the public, and the environment.

3. Elements: All topics required by OSHA 29 CFR 1910.120(b)(4)/ 1926.65(b)(4); and those listed in Subsection 1.06, "Site Specific Health and Safety Plan (HASP) Provisions", D. 1. items (a) through (z) of this Specification Section shall be addressed in the HASP. Where the use of a specific topic is not applicable to the project, the HASP shall include a statement to justify its omission or reduced level of detail and establish that adequate consideration was given the topic.

F. Site Description and Contamination Characterization

1. The Contractor shall provide a site description and contaminant characterization in the HASP that meets the requirements of 29 CFR 1910.120/1926.65.

G. Safety and Health Risk Analysis

1. The HASP shall address the safety and health hazards on this site and for every operation to be performed. The Contractor shall review existing records and data to identify potential chemical and physical hazards associated with the site and shall evaluate their impact on field operations. Sources, potential exposure pathways, and other factors as noted in 29 CFR 1910.120/126.65, paragraph (c) (7), employed to assess risk shall be described. The Contractor shall develop and justify action levels for implementation of engineering controls and PPE upgrades and downgrades for controlling worker exposure to the identified hazards. If there is no permissible exposure limit (PEL) or published exposure level for an identified hazard, available information from other published studies may be used as guidance. Any modification of an established PEL must be fully documented.

2. The HASP shall include a comprehensive section that discusses the tasks and objectives of the site operations and the logistics and resources required to complete each task. The hazards associated with each task shall be identified. Hazard prevention techniques, procedures, and/or equipment shall be identified to mitigate each of the possible hazards.

H. Staff Organization, Qualifications and Responsibilities

1. The Contractor shall assign responsibilities for safety activities and procedures. An outline of the safety chain of command shall be provided in the HASP. Qualifications, including education, experience, certifications, and

training in safety and health for all personnel engaged in safety and health functions, shall be documented in the HASP.

I. Employee Training Assignments

1. The Contractor shall develop a training program to inform employees, Subcontractors, supplier's representatives, and official visitors to the project site of the special hazards and procedures (including PPE, its use and inspection) to control these hazards during field operations. This program shall be consistent with the requirements of 29 CFR 1910.120 and 29 CFR 1926.65.

J. Personal Protective Equipment

1. The plan shall include the requirements and procedures for employee protection and shall include a detailed section on respiratory protection if needed. The Contractor shall describe in detail and provide appropriate PPE to ensure that workers are not exposed to levels greater than the action level for identified hazards for individual operations stated for each work zone. The level of protection shall be specified for each operation and each work zone and shall be in compliance with all requirements of 29 CFR 1910 and 19 CFR 1926. The Contractor shall provide and maintain all PPE.

K. Medical Surveillance Program

1. All on-site Contractor personnel or subcontractors engaged in 29 CFR 1910.120/1926.65 operations shall have medical examinations meeting the requirements of 29 CFR 1910.120(f) prior to commencement of work.

2. The HASP shall include current certification of medical evaluation and clearance by the physician for each employee engaged in 29 CFR 1910.120/1926.65 operations at the site.

L. Exposure Monitoring/Air Sampling Program

1. The Contractor shall submit an Air Monitoring Plan as part of the HASP which is consistent with 29 CFR 1910.120, paragraphs (b) (4) (ii) (E), (c) (6), and (h). The Contractor shall identify specific air sampling equipment, locations, and frequencies in the Air Monitoring Plan. Air and exposure monitoring requirements shall be specified in the Contractor's site specific HASP after a careful review of the contaminants of concern and planned site activities.

M. Heat/Cold Stress Monitoring

1. The Contractor's HSM shall establish a heat/cold stress monitoring program for on-site activities. Details of the monitoring program, including work/rest

schedules and physiological monitoring requirements, shall be described in the HASP. All personnel shall be trained to recognize the symptoms of heat and cold stress and related ailments. The Contractor shall designate, in writing, the HSO and alternate persons to be responsible for the heat/cold stress monitoring program.

N. Standard Operating Procedures (SOPs), Engineering Controls and Work Practices

1. The Contractor shall outline SOPs for preventing accidents and protecting personnel from injury and occupational illness for all operations having a significant accident potential. The Contractor shall identify engineering controls and safe work practices to be utilized.

O. Site and Control Layout

1. The HASP shall include a site map, work zone delineation (support, contamination reduction, and exclusion), on/off-site communication procedures, site access controls, and security (physical and procedural). No person shall be allowed entry into the exclusion zone or contamination reduction zone unless they meet the requirements set forth in this section.

2. Communications: Written procedures for routine and emergency communications procedures shall be included in the Contractor's site specific HASP.

P. Personal Hygiene, Personal Decontamination and Equipment Decontamination

1. Decontamination facilities and procedures for PPE, sampling equipment, and heavy equipment shall be discussed in detail in the HASP.

Q. Emergency Equipment and First-Aid Requirements

1. The Contractor shall provide appropriate emergency first-aid kits and equipment suitable for treatment of exposure to identified hazards, including chemical agents. The Contractor shall provide personnel with certified first aid/CPR training on site at all times during site operations. An emergency contact list and map to a local hospital shall be included in the HASP.

R. Emergency Response Plan and Spill Containment Program

1. The Contractor shall establish procedures to take emergency action in the event of immediate hazards (i.e., a chemical agent leak or spill, fire, or personal injury). Personnel and facilities providing support in emergency procedures shall be identified. The emergency equipment to be present on site and the Emergency Response Plan procedures, as required by 29 CFR

1910.120, paragraph (l), shall be specified in the Emergency Response Plan, included as part of the HASP.

S. Logs, Reports, and Record Keeping

1. The Contractor shall maintain safety inspection logs and reports, accident/incident reports, medical certifications, training logs, monitoring results, etc. All exposure and medical monitoring records are to be maintained according to 29 CFR 1910 and 29 CFR 1926.

2. The format of these logs and reports shall be developed by the Contractor to include training logs, daily logs, weekly reports, safety meetings, medical surveillance records, and a phase-out report. The Contractor shall maintain these logs, records, and reports in duplicate.

3. The Contractor shall immediately notify the Engineer of any accident/incident. Within two working days of any reportable accident the Contractor shall complete and submit an Accident Report to the Engineer.

PART 2 - PRODUCTS

2.01 CHEMICAL PROTECTIVE CLOTHING (CPC) AND PERSONAL PROTECTIVE EQUIPMENT (PPE)

A. The Contractor must provide chemical protective clothing (CPC) and PPE as stipulated in the Contractor's HASP during the performance of work in areas identified as potentially posing a risk to worker health and safety for workers employed by the Contractor and all subcontractors and for Owner’s employees that will inspect the site.

PART 3 - EXECUTION

3.01 IMPLEMENTATION OF SITE-SPECIFIC HASP

A. The Contractor shall be responsible for the implementation of the HASP throughout the performance of the work within the project limits, as indicated in the Contract Documents, by the Engineer, or by the HASP. In work locations and areas identified as having a potential risk to worker health and safety, the Contractor shall be prepared to immediately implement the appropriate health and safety measures, including but not limited to the use of PPE and engineering and administrative controls. The Contractor shall be responsible for the health and safety of his employees and subcontractors during the progress of the work.

END OF SECTION

SECTION 01152

APPLICATIONS FOR PAYMENT

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit Applications for Payment to the Engineer in accordance with the schedule established by Conditions of the Contract and Agreement between Owner and Contractor.

B. The accepted Schedule of Values, Section 01370, shall be used as the basis for the Contractor's Application for Payment.

1.02 RELATED WORK

A. Schedule of Values is included in Section 01370.

B. Contract Closeout is included in Section 01700.

1.03 SUBMITTALS

A. Submit to the Engineer, in accordance with Section 01300, applications typed on forms provided by the Owner, Application for Payment, with itemized data typed on 8½-in by 11-in or 8½-in by 14-in white paper continuation sheets.

B. Provide itemized data on continuation sheet.

1. Format, schedules, line items and values: Those of the Schedule of Values accepted by the Engineer.

C. The following documents shall be provided with each application for payment and will be returned to the Contractor if any such information is missing or incomplete:

Monthly Construction Progress Report with updated project schedule.

Confirmation that as-built documents are current

MBE/WBE current reporting data for the same month the Application of Payment is ending

Certified Payrolls for Contractor and Sub-Contractors

Construction photographs (if required)

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form

1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.

2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.

3. Execute certification with signature of a responsible officer of Contract firm.

B. Continuation Sheets

1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.

2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.

a. Round off values to nearest dollar, or as specified for Schedule of Values.

3. List each Change Order executed prior to date of submission, at the end of the continuation sheets.

a. List by Change Order Number and description, as for an original component item of work.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the Owner or the Engineer requires substantiating data, submit suitable information, with a cover letter identifying:

1. Project.

2. Application number and date.

3. Detailed list of enclosures.

4. For stored products: Only if previously approved by the Owner as per SC 14.02.A.7

a. Documentation as detailed in SC 14.02.A.7.

b. Description of specific material.

B. Submit one copy of data and cover letter for each copy of application.

C. As a prerequisite for payment, submit a "Surety Acknowledgment of Payment Request" letter showing amount of progress payment which the Contractor is requesting.

D. Maintain an updated set of drawings to be used as as-built drawings. As a prerequisite for monthly progress payments, exhibit the updated as-built drawings for review by the Owner and the Engineer.

E. Invoice shall include a summary of MBE/WBE expenditures.

F. Provide all data required by Section 1.03 Submittals

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in Application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 - Contract Closeout.

1.07 SUBMITTAL PROCEDURE

A. Submit Applications for Payment to the Engineer at the times stipulated in the Agreement.

B. Number: Five copies of each Application.

C. When the Engineer finds Application properly completed and correct, he/she will transmit certificate for payment to Owner.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 PRE CONSTRUCTION CONFERENCE

A. A pre-construction conference required by Article 2.06 of the General Conditions and Section 01210 will be held between the Contractor, the Engineer, the Design Engineer, and the Owner.

B. Contractor will be notified of the time, date and place where the pre-construction conference will be held.

1.02 PROGRESS MEETINGS

A. The Engineer will schedule progress meetings twice each month with one meeting timed to coordinate with preparation of payment requests. Require every entity then involved in the planning, coordination or performance of work to be properly represented at each meeting. Review each entity's present and future needs including interface requirements, time, sequence, deliveries, access, site utilization, temporary facilities and services, hours of work, hazards and risks, housekeeping, change orders and documentation of information for payment requests. Discuss whether each element of current work is ahead of schedule, on time, or behind time in relation with the updated progress schedule. Determine how behind-time work will be expedited and secure commitments from the entities involved in doing so. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within the Contract Time. Review everything of significance which could affect the progress of the work.

B. The time and location of the meetings will be determined by the Engineer.

C. The minutes of the meetings shall be maintained by the Owner. Within three (3) days after each progress meeting date, draft meeting minutes will be distributed.

D. Contractor shall prepare schedule look ahead for the meeting, including expected activities for the next 3 weeks following each meeting date.

E. Immediately following each progress meeting where revisions to the Progress Schedule have been made or recognized (regardless of whether agreed to by each entity represented), the Contractor shall revise the Schedule. Reissue revised Schedule concurrently with report of each meeting, unless extensive revisions require a longer revision period, but in any case, reissue within 10 days

after meeting. At intervals matching the preparation of payment requests, revise and reissue the Schedule to show actual progress of the work in relation to the latest revision of the Schedule.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 01210

PRE-CONSTRUCTION CONFERENCE

PART 1 - GENERAL

1.01 GENERAL

A. Date, Time, and Location: Conference will be held after execution of the Contract and before construction is started at the site. The Owner will fix the date, time and location of the meeting.

B. Engineer shall prepare agenda, preside at meetings, prepare and distribute a transcript of proceedings to all parties.

C. Contractor shall provide data required, contribute appropriate items for discussion, and be prepared to discuss all items on agenda.

1.02 REQUIRED ATTENDANCE

A. Contractor and major Subcontractors.

B. Owner's representative: Engineering, Construction, EH&S

C. Engineer.

1.03 AGENDA

A. Agenda will include, but will not necessarily be limited to, the following:

1. Designation of responsible personnel.
2. Subcontractors.
3. Coordination with other contractors.
4. Construction schedule.
5. Other Submittals
6. Processing of Shop Drawings and distribution of Submittals.
7. Processing of field decisions and Change Orders.
8. Requirements for copies of Contract Documents.

9. Insurance in force.
10. Schedule of Values.
11. Processing and Schedule of Payments.
12. Use of premises.
13. Contractor responsibility for safety and first aid procedures.
14. Security.
15. Housekeeping.
16. Field Office.
17. As-Built Drawings
18. Any other project related items.
19. Safety standards procedures and submittals.
20. Utility Coordination.
21. Right of Way.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. This Section specifies the general methods and requirements of submissions applicable to Shop Drawings, Product Data, and Samples. Additional general submission requirements are contained in Article 6.17 of the General Conditions. Detailed submittal requirements are specified in the technical Sections.

B. All submittals shall be clearly identified by reference to Section Number, Paragraph, Drawing Number or Detail as applicable. Submittals shall be clear and legible and of sufficient size for presentation of data.

1.02 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

A. Shop Drawings

1. Shop drawings as specified in individual Sections include, custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the work.

2. All shop drawings submitted by subcontractors shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

3. The Contractor shall check all subcontractor's shop drawings regarding measurements, size of members, materials and details to make sure that they conform to the intent of the Drawings and related Sections. Return shop drawings found to be inaccurate or otherwise in error to the subcontractors for correction before submission thereof.

4. All details on shop drawings shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted.

B. Product Data

1. Product data as specified in individual Sections include, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the work.

C. Samples

1. Samples specified in individual Sections include, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the Design Engineer, Engineer or Owner for independent inspection and testing, as applicable to the work.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:

1. Field measurements

2. Field construction criteria

3. Catalog numbers and similar data

4. Conformance with related Sections

B. Each shop drawing, sample and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." Shop drawings and product data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Resident Project

Representative a copy of each transmittal sheet for shop drawings, product data and samples at the time of submittal to the Engineer.

C. The Contractor shall utilize a submittal identification numbering system in the following manner:

1. The first five digits shall be the applicable Section Number.

2. The next three digits shall be the numbers 001 to 999 to sequentially number each initial separate item or drawing submitted under each specific Section Number.

3. The last character shall be a letter, A to Z, indicating the submission, or resubmission of the same Drawing, i.e., "A=1st submission, B=2nd submission, C=3rd submission, etc. A typical submittal number would be as follows:

03300-008-B

03300	=	Section for Concrete
008	=	The eighth initial submittal under this section.
B	=	The second submission (first resubmission) of that particular shop drawing.

D. Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.

E. The review and approval of shop drawings, samples or product data by the Design Engineer will not relieve the Contractor from the responsibility for the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer or Design Engineer will have no responsibility therefore.

F. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

G. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.

1.04 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the Work or in the work of any other contractor.

B. Each submittal, appropriately coded, will be returned within 30 calendar days following receipt of submittal by the Engineer.

C. Number of submittals required:

1. Shop Drawings: Eight copies.

2. Product Data: Eight copies.

3. Samples: Submit the number stated in the respective Sections.

D. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.

2. The Project title and number.

3. Contractor identification.

4. The names of:

a. Contractor

b. Supplier

c. Manufacturer

5. Identification of the product, with the section number, page and paragraph(s).

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the work or materials.

8. Applicable standards, such as ASTM or Federal Standards numbers.

9. Identification of deviations from Contract Documents.

10. Identification of revisions on resubmittals.

11. A blank space suitably sized for Contractor and Design Engineer stamps.

12. Where calculations are required to be submitted by the Contractor, the calculations shall have been checked by a qualified individual other than the preparer. The submitted calculations shall clearly show the names of the preparer and of the checker.

1.05 REVIEW OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. The review of shop drawings, data and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:

1. as permitting any departure from the Contract requirements;

2. as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;

3. as approving departures from details furnished by the Design Engineer, except as otherwise provided herein.

B. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.

C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or Contract Time, the Engineer may return the reviewed drawings without noting an exception.

D. Submittals will be returned to the Contractor under one of the following codes:

Code 1 - "APPROVED" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.

Code 2 - "APPROVED AS NOTED" - This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.

Code 3 - "APPROVED AS NOTED/CONFIRM" - This combination of codes is assigned when a confirmation of the notations and comments IS required by the Contractor. The Contractor may, at his own risk, release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by

the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the confirmation.

Code 4 - "APPROVED AS NOTED/RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the resubmittal.

Code 5 - "NOT APPROVED" is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.

Code 6 - "COMMENTS ATTACHED" is assigned where there are comments attached to the returned submittal which provide additional data to aid the Contractor.

Code 7 - "RECEIPT ACKNOWLEDGED" - This code is assigned to acknowledge receipt of a submittal that is not subject to the Design Engineer’s review and approval; and, is being filed for informational purposes only.

Codes 1 through 5 designate the status of the reviewed submittal with Code 6 showing there has been an attachment of additional data.

E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall identify all revisions made to the submittals, either in writing on the letter of transmittal or on the shop drawings by use of revision triangles or other similar methods. The resubmittal shall clearly respond to each comment made by the Design Engineer on the previous submission. Additionally, the Contractor shall direct specific attention to any revisions made other than the corrections requested by the Design Engineer on previous submissions.

F. Partial submittals may not be reviewed. The Design Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor and will be considered "Not Approved" until resubmitted. The Design Engineer may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

G. Repetitive Review

1. Shop drawings and other submittals will be reviewed no more than twice at the Owner's expense. All subsequent reviews will be performed at times convenient to the Design Engineer and at the Contractor's expense, based

on the Design Engineer's then prevailing rates. The Contractor shall reimburse the Owner for all such fees invoiced to the Owner by the Design Engineer. Submittals are required until approved.

2. Any need for more than one resubmission, or any other delay in obtaining Design Engineer's review of submittals, will not entitle Contractor to extension of the Contract Time.

H. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least 7 working days prior to release for manufacture.

I. When the shop drawings have been completed to the satisfaction of the Design Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

1.06 DISTRIBUTION

A. The Contractor shall distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Engineer. Number of copies shall be as directed by the Engineer but shall not exceed six.

1.07 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

A. If specifically required in other related Sections, submit a P.E. Certification for each item required, in the form attached to this Section, completely filled in and stamped.

1.08 GENERAL PROCEDURES FOR SUBMITTALS

A. Coordination of Submittal Times: The Contractor shall prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work of other related Sections, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

END OF SECTION

P.E. CERTIFICATION FORM

NOTE: Edit the following and insert project information as required.

The undersigned hereby certifies that he/she is a professional engineer registered in the [State] [Commonwealth] of _____ and that he/she has been employed by

_____ to design
(Name of Contractor)

_____
(Insert P.E. Responsibilities)

in accordance with Section _____ for the

_____.
(Name of Project)

The undersigned further certifies that he/she has performed the design of the _____

_____, that said design is in conformance
(Name of Project)

with all applicable local, state and federal codes, rules, and regulations, and that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the Owner or Owner's representative, within seven days following written request therefor by the Owner.

_____	_____
P.E. Name	Contractor's Name
_____	_____
Signature	Signature
_____	_____
Address	Title
	_____
	Address

SECTION 01310

PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 SCHEDULE OF OPERATIONS

A. Within 10 working days after the date that the Contract is fully executed, the Contractor shall submit to the Owner, and if directed, its Engineer, a Horizontal Bar Chart Schedule of the Work and sufficient copies as the Owner may require, that shall show the dates on which the Contractor plans to commence and complete the various parts of the Work. The schedule shall demonstrate the various locations where each part of the Work shall be performed, the duration of each part of the Work and any events, services or needs unique to each such location. The overall schedule shall include dates for Contractor's submittals and approvals and dates by which information and approvals are required from the Owner. Once the Contractor has received the Owner's written acceptance of the Schedule of the Work, the Contractor shall comply with such approved Schedule unless otherwise directed in writing by the Owner or unless the Contractor is entitled to an adjustment in the Contract Time pursuant to the Contract Documents. The Contractor shall update the Schedule of the Work on a monthly basis or more frequently as appropriate given the conditions of the Work and the Project.

B. The Contractor shall be solely responsible for contacting and coordinating with the appropriate local and state authorities concerning any public or semi-public events that may occur during the period of performance of the Work that may impact the Work. The Contractor shall be responsible for arranging the sequence of the Work to accommodate any restrictions on the performance of the Work that such events may impose. The Contractor shall not be entitled to any claims for extras due to delays, extra pipe handling, extra excavation, etc. resulting for the imposition of such restrictions. However, an extension of time to complete the Work may be granted, in the discretion of the Owner, for delays caused by said restrictions.

C. At any time during the Contractor's performance of the Work, the Owner may, in its discretion, direct the sequence in which the Contractor shall perform the various parts of the Work to facilitate the performance of other work by the Owner or Others, provided such direction does not unreasonably interfere with the Schedule of the Work. To the extent such changes increase Contractor's time and costs the Contract Price and Contract Time shall be equitably adjusted.

D. In the event that Contractor requests an extension of time or makes a claim for an equitable adjustment, the request or claim shall be accompanied by a schedule which reflects the affected work and demonstrates the impact of the claimed event on the Project.

E. The Owner shall issue the Notice to Proceed to the Contractor subsequent to the acceptance of the Schedule of Work. The calendar days for the project will begin based on the date specified in the Notice to Proceed.

1.02 TIME AND ORDER OF WORKING

A. In order that the Work may be conducted with a minimum of inconvenience to the public and, that the Work on this Contract may be coordinated with other Work that may be under construction or contemplated, and, that Work under the Contract may conform to conditions under which it has been undertaken or conditions attached to the rights-of-way for this Work, the Owner may determine the point or points and time or times when portions of the Work will be commenced or carried on and may issue orders pertaining thereto and relative to the rate of progress on the several portions of the Work.

B. In event the Contractor has reason to think he has been delayed or may be delayed by any act or omission of the District or any of its agents, or by any other cause beyond the control of the Contractor and which could not have been anticipated, notice thereof shall be given in writing to the Owner as provided elsewhere herein and in the Contract Agreement.

C. In any one street, or other reasonable section of the job, as may be determined by the Owner, the main pipeline and appurtenances shall be completed, leakage-tested, inspected, cleaned and defects corrected where necessary, ready for use, and the compaction, paving repair and cleanup Work shall be done before Work is started on any other street or section.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION

SECTION 01320

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Photographs taken at specified intervals during and after construction.

1.02 SUBMITTALS

The Contractor shall:

A. Submit 2 prints of each photograph.

B. Submit electronic files of each photograph on a CD.

1.03 QUALITY ASSURANCE

A. The Contractor shall secure the services of a professional photographer who has at least 5 years experience in construction photography and has successfully completed a 10-hour Occupational Safety and Health Training Course in Construction Safety and Health within the last 60 months from the anticipated completion of this work. (This period of 60 months shall also cover the time spent by the photographer to complete the work). Submit work samples to the Engineer if requested. The photographer shall not be changed without written approval by the Engineer.

PART 2 - PRODUCTS

2.01 CONSTRUCTION PHOTOGRAPHS

A. Provide color prints

1. Size: 8" X 10"

2. Type: Smooth surface, color glossy print, single weight paper white base.

3. Mounting: No mounting required.

4. Identification: Type on the back of the photo, the following:

a. Job Name

b. Brief description of view; location, station, direction, etc.

c. Date, names of Engineer, Contractor, Photographer and Photograph number.

B. Prints shall not be issued without written approval of the Engineer.

C. Electronic files shall be in .jpg format.

PART 3 - EXECUTION

3.01 PROGRESS PHOTOGRAPHY

A. The Contractor shall take construction photographs weekly of active work areas throughout the life of the Contract. The photographs shall be indicative of the work that is currently in progress. A total of 6 photographs shall be taken at each scheduled interval at each location where Work is in progress.

B. Take 24 photographs each month throughout the life of the Contract.

C. Take a total of 24 post construction photographs along the proposed pipeline route and a total of 5 photographs at each additional work area.

D. Take photographs of utility abandonments.

E. Take photographs of relocated utility connections.

F. Take photographs of test pit locations showing exposed piping.

END OF SECTION

THE METROPOLITAN DISTRICT

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Contractor shall submit to the Engineer a Schedule of Values allocated to the various portions of the work, within 7 days after the effective date of the Agreement.

B. Upon request of the Engineer, the Contractor shall submit data to substantiate their correctness of the schedule of values.

C. The accepted Schedule of Values shall be used only as the basis for the Contractor's Applications for Payment.

1.02 RELATED REQUIREMENTS

A. Standard General Conditions of the Construction Contract are included in Section 00700.

B. Application for Payment is included in Section 01152.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Type schedule on an 8 ½-in by 11-in or 8 ½-in by 14-in white paper furnished by the District; Contractor's standard and automated printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:

1. Title of Project and location.
2. Engineer and Project number.
3. Name and Address of Contractor.
4. Contract designation.
5. Date of submission.

B. Schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.

C. Identify each line item with the number and title of the respective Section.

D. For each major line item list sub-values of major products or operations under the item.

E. For the various portions of the work:

1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.

2. For items on which progress payments will be requested for stored materials, break down the value into:

a. The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials upon request by the Engineer.

b. The total installed value.

F. The sum of all values listed in the schedule shall equal the total Contract Sum.

G. Provide a breakdown of General Conditions cost including but not limited to the following typical items: Superintendent, Project Manager, Field office expense, Field Office Wages, Trailers/field office, Dumpsters, Bond, Traffic Control, Security, Fencing, Home Office/Administration, Utility Hookups, Equipment Maintenance, Temporary Utilities, Permits, Survey/Layout, Testing Labs, Preconstruction Survey, As-Built Documents, Project Close Out Cost and other specific cost items as determined by the Engineer.

1.04 SUBSCHEDULE OF UNIT MATERIAL VALUES

A. Submit a sub-schedule of unit costs and quantities for:

1 Products on which progress payments will be requested for stored products. See Supplementary Conditions Section 14.02.A.7 for requirements when submitting request for payment.

B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.

C. The unit quantity for bulk materials shall include an allowance for normal waste.

D. The unit values for the materials shall be broken down into:

1. Cost of the material, delivered and unloaded at the site, with taxes paid.

2. Copies of invoices for component material shall be included with the payment request in which the material first appears.

3. Paid invoices shall be provided with the second payment request in which the

material appears or no payment shall be allowed and/or may be deleted from the request.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01390

CONTRACTOR EVALUATION

PART 1: GENERAL

1.01 REQUIREMENTS INCLUDED

A. In accordance with the provisions of Metropolitan District Ordinances Chapter G-5, adopted March 2, 1992, the Contractor's Performance under this Contract will be evaluated.

1. Copies of G-5 may be acquired by the Contractor at the Office of the District Clerk located at 555 Main Street, Hartford, Connecticut.

2. A copy of the Owner's standard form for this evaluation is attached to these documents.

B. In accordance with the requirements of CGS Sections 4a-100 and 4a-101(if applicable to this Contract), the Contractor's performance under this Contract will be evaluated.

1. A copy of DAS Form 745 is available at the DAS Prequalification Unit website.

C. There will be no direct payment to the Contractor for these requirements.

1.02 FORM AND CONTENT OF REQUIREMENTS

A. There will be a written evaluation by the Owner/Owner's Representative at the 50 % completion point of the Project using both the Owner and the DAS forms.

B. There will be a written evaluation by the Owner/Owner's Representative at the 100 % completion point of the Project using both the Owner and DAS evaluation forms.

C. The Owner shall submit a copy of the completed DAS Contractor Performance Evaluation Form 745 to the DAS Prequalification Unit at the completion of the Contract (if applicable).

END OF SECTION

THE METROPOLITAN DISTRICT

CONTRACTOR PERFORMANCE EVALUATION

Contract No.: **2011-72**

Title: **Sanitary Sewer Improvements: Church Street and Windmill Lane**
Newington, CT

Contractor: **ABC Construction**

Address: **555 Main Street**
Hartford, CT
006142

50% COMPLETION

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut 06142

THE METROPOLITAN DISTRICT

CONTRACTOR PERFORMANCE EVALUATION

Contract No.: **2013-04**

Title: **Maple Avenue Sanitary Sewer Replacement and Rehabilitation**
Windsor, CT

Contractor: **ABC Construction**

Address: **555 Main Street**
Hartford, CT
06142

50% COMPLETION

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut 06142-0800

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

COMPETENCE

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Overall knowledge of the type of work (sewer construction, plant upgrade, water main installation, etc.) - execution of the type(s) of construction required — **3**

- ☐ Superior — Extremely knowledgeable and efficient with a virtual command for the work required
- ☐ Good — Skilled in the work - strong understanding for the minor details involved in the construction
- ☑ Acceptable/NA — Competent and capable to perform this type of work
- ☐ Poor — Inexperienced with the type of work - lack strong understanding of necessary concepts
- ☐ Unacceptable — Unskilled and unfamiliar with the type of work

Comment:

2) Knowledge of the project — **3**

- ☐ Superior — Extremely knowledgeable and well-informed about the project to the finest detail
- ☐ Good — Knowledgeable and familiar with all aspects of the project
- ☑ Acceptable/NA — General understanding of the entire project
- ☐ Poor — Lack of knowledge on specific areas of the project
- ☐ Unacceptable — General lack of understanding of the project

Comment:

3) Adherence to plans and specifications — **3**

- ☐ Superior — Strict adherence to the plans and specifications
- ☐ Good — General conformance to the plans and specifications - very minor approved deviations
- ☑ Acceptable/NA — Occasional deviations from the plans and specifications - alternate products, etc.
- ☐ Poor — Deviations from the plans and specifications, inferior product submittals, design modifications
- ☐ Unacceptable — Willful disregard for the plans and specifications

Comment:

4) Competence and professionalism of the Project Manager and Superintendent — **3**

- ☐ Superior — Extremely knowledgeable, cooperative, professional, organized and prepared at all times
- ☐ Good — Knowledgeable and cooperative - easy to work with
- ☑ Acceptable/NA — Competent and capable to perform their duties
- ☐ Poor — Not fully qualified to hold the position for the type of work required or size of contract
- ☐ Unacceptable — Lacking skills necessary to properly perform required tasks

Comment:

5) Competence and professionalism of the work force — **3**

- ☐ Superior — Extremely knowledgeable, efficient, skilled and courteous at all times
- ☐ Good — Knowledgeable and efficient
- ☑ Acceptable/NA — Capable of performing the necessary construction
- ☐ Poor — Unfamiliar with the proper or standard construction techniques - difficult to work with
- ☐ Unacceptable — Uncooperative, problematic, and difficult - unskilled with work required

Comment:

COMPETENCE Summary

Average Score (Total / #questions)	=	**3.0**	**Overall COMPETENCE Rating** =	**Acceptable**	**TOTAL** **15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

MANAGEMENT OF JOB SITE SAFETY

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Contractor's actions in creating a safe job site and meeting safety responsibilities of the contract **3**

☐ Superior	Met and exceeded all criteria of the safety responsibilities within the contract	*Comment:*
☐ Good	Created a safe job site and met safety responsibilities within the contract	
☑ Acceptable/NA	Met basic safety requirements within the contract	
☐ Poor	Created a safe job site and met safety responsibilities within the contract only after repeated prompting by the MDC	
☐ Unacceptable	Contractor did not meet requirements for creating a safe job site nor met safety responsibilities within the contract	

2) Contractor's performance in preventing injuries **3**

☐ Superior	Contractor completed project with no employee injuries	*Comment:*
☐ Good	Contractor completed project with only minor injuries, not requiring medical treatment	
☑ Acceptable/NA	Contractor completed project with employee injuries requiring medical treatment, but no lost work days	
☐ Poor	Contractor completed project with injuries resulting in restricted duty	
☐ Unacceptable	Contractor completed project with more than one injury resulting in lost work days	

3) Contractor's actions in reporting all accidents, incidents and injuries **3**

☐ Superior	Contractor reported all accidents, incidents and injuries immediately to MDC Inspector or MDC Project Engineer	*Comment:*
☐ Good	Contractor reported all accidents, incidents and injuries within 24 hrs.	
☑ Acceptable/NA	Contractor reported all accidents, incidents and injuries within 48 hrs.	
☐ Poor	Contractor reported all accidents, incidents and injuries only if witnessed by District personnel	
☐ Unacceptable	Contractor did not report accidents, incidents and injuries until prompted by the District	

4) Maintenance and protection of traffic **3**

☐ Superior	Minimal impact on traffic, provided a safe work environment for employees, motorists and pedestrians, well maintained signs, etc.	*Comment:*
☐ Good	Minor impact on traffic, provided a safe work environment for employees, motorists and pedestrians, well maintained signs, etc.	
☑ Acceptable/NA	Provided a safe work environment	
☐ Poor	Signage was not clear to drivers, traffic patterns caused delays	
☐ Unacceptable	Failure to provide a safe work environment, poor signage, failure to maintain signs and cones	

5) Contractor's ability to work safely and in accordance with OSHA regulations and the MDC Contractor Safety Program without prompting from District personnel **3**

☐ Superior	Contractor followed their company safety program and complied with the elements of the MDC Contractor Safety Program and OSHA regulations	*Comment:*
☐ Good	Compliance was met only after prompting from District personnel	
☑ Acceptable/NA	Contractor's safety performance required a formal meeting to discuss safety concerns	
☐ Poor	A stop work order was issued to contractor for a non-compliance safety issue	
☐ Unacceptable	Contractor was issued an OSHA citation for a safety violation on this project	

MANAGEMENT OF JOB SITE SAFETY Summary

Average Score (Total / #questions)	=	**3.0**	**Overall SAFETY Rating**	=	**Acceptable**	**TOTAL**	**15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

WORKMANSHIP

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Adherence to District and industry standards — **3**

☐ Superior	All work completed in strict conformance to District standards	*Comment:*
☐ Good	Work generally completed in conformance with District or industry standards	
☑ Acceptable/NA	Work meets the general intent of the District's standards (pipe bedding, materials, patching, etc.)	
☐ Poor	Work meets industry standards but fails to meet specific District standards	
☐ Unacceptable	Work or portions of the work fail to meet District or industry standards for quality	

2) Effectiveness of Contractor's quality control measures — **3**

☐ Superior	Work completed properly the first time without the need for re-work or punch list items	*Comment:*
☐ Good	Work completed properly without the need for District prompting.	
☑ Acceptable/NA	Work completed with minor re-work - required minimal prompting / punch lists to correct work	
☐ Poor	Several work items requiring District intervention to meet contract requirements	
☐ Unacceptable	Contractor failed to oversee or correct work without significant prompting from the District	

3) Accuracy of the work — **3**

☐ Superior	All work completed in strict conformance to the plans with exacting tolerances	*Comment:*
☐ Good	All work completed in conformance to the plans - straight lines and grades	
☑ Acceptable/NA	Work meets acceptable tolerances	
☐ Poor	Failure to meet acceptable tolerances - items slightly bent or bowed, improper slopes, etc.	
☐ Unacceptable	Items consistently or severely - misaligned, bent or bowed, reverse or flat slopes, etc.	

4) Overall quality of the final product — **3**

☐ Superior	Overall construction / final product is superior - exceeds industry standards	*Comment:*
☐ Good	Overall construction / final product is above average industry standards	
☑ Acceptable/NA	Meets industry standard	
☐ Poor	Final product shows evidence of repairs, re-work, patching, etc.	
☐ Unacceptable	Final product does not meet District or commonly accepted industry standards	

5) Ability of the work to pass necessary testing — **3**

☐ Superior	Tests passed on the first time without the need for any corrective measures	*Comment:*
☐ Good	Majority of work passed testing the first time	
☑ Acceptable/NA	Work is able to pass necessary testing without significant corrective work or repetitive testing	
☐ Poor	Work passes testing after significant re-work or multiple tests	
☐ Unacceptable	Majority of the work can not pass testing without significant re-work or multiple tests	

WORKMANSHIP Summary

Average Score (Total / #questions)	=	**3.0**	**Overall WORKMANSHIP Rating** =	**Acceptable**	**TOTAL**	**15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

DILIGENT PROSECUTION AND TIMELY COMPLETION OF WORK

~ORGANIZATION AND MANAGEMENT OF RESOURCES~

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Ability to progress the work without interruptions or shutdowns (work stoppages) — **3**

- ☐ Superior — Maintains a consistent work force and work hours for the duration of the project
- ☐ Good — Work force is adequate at all times, requires periodic overtime to meet schedule
- ☑ Acceptable/NA — Work progresses without significant shutdowns
- ☐ Poor — Work stoppages required due to problems with material deliveries or subcontractors availability
- ☐ Unacceptable — Project is delayed without reason or due to contractors forces working on other projects

Comment:

2) Availability of staff, material and equipment to meet project requirements — **3**

- ☐ Superior — Staff, equipment and materials were always available to meet the project schedule
- ☐ Good — Staff, equipment and materials were generally available to meet the project schedule
- ☑ Acceptable/NA — Staff, material and equipment shortages did not result in project delays
- ☐ Poor — Delays and/or multiple scheduling changes to adjust for shortage of staff, material or equipment
- ☐ Unacceptable — Several delays resulting from shortage of staff, material or equipment

Comment:

3) Adherence to project schedule including project completion — **3**

- ☐ Superior — Maintains an accelerated project schedule resulting in the early completion of the project
- ☐ Good — Completes project on time or ahead of schedule
- ☑ Acceptable/NA — Completes project within allotted contract time
- ☐ Poor — Project schedule not met or adhered to - requires time extensions to complete work
- ☐ Unacceptable — Consistently behind schedule - does not complete the project within allotted time

Comment:

4) Submission and quality of project schedule and updates — **3**

- ☐ Superior — Accurate and complete schedule including updates submitted in accordance with contract
- ☐ Good — Schedule and updates submitted in timely manner - accurate and realistic updates etc.
- ☑ Acceptable/NA — Schedule and updates submitted upon request of the District
- ☐ Poor — Inaccurate or unrealistic schedule requiring consistent updates
- ☐ Unacceptable — Failure to provide a realistic or accurate schedule or refusal to update/follow the schedule

Comment:

5) Submission of Shop Drawings to Prevent Delays in the Work — **3**

- ☐ Superior — All submissions on time, complete and meeting requirements of the specifications
- ☐ Good — All submissions on time and complete
- ☑ Acceptable/NA — Majority of submissions on time - project was not delayed due to shop drawing process
- ☐ Poor — Late submissions requiring Contractor to request accelerated review from the Engineer
- ☐ Unacceptable — Few submissions on time resulting in project delays

Comment:

DILIGENT PROSECUTION AND TIMELY COMPLETION OF WORK Summary

Average Score (Total / #questions)	=	**3.0**	**Overall "Time/Prosecution" Rating**	=	**Acceptable**	**TOTAL** **15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

COOPERATION

~Relations with Public and Local Officials~

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Response to District directives — **3**

- ☐ Superior — All directives are responded to immediately
- ☐ Good — All directives are responded to in a timely manner without additional prompting
- ☑ Acceptable/NA — Most directives are responded to in a timely manner
- ☐ Poor — Slow response or argumentative on several directives
- ☐ Unacceptable — Non-responsive or argumentative in responding to most directives

Comment:

2) Cooperation with local officials — **3**

- ☐ Superior — Strong working relationship - worked together, coordinated inspection requirements
- ☐ Good — Good working relationship - willingness to work with town inspection staff
- ☑ Acceptable/NA — Met all permit and or contract requirements
- ☐ Poor — Difficult at times, met minimal requirements
- ☐ Unacceptable — Generally uncooperative, argumentative or unprofessional

Comment:

3) Cooperation and resolution to concerns of local residents and/or businesses — **3**

- ☐ Superior — Always displayed concern for residents, planned work to minimize impact to neighborhood
- ☐ Good — Displayed concern for residents, worked to minimize impacts to neighborhood
- ☑ Acceptable/NA — Cooperated with reasonable requests by local residents and businesses in a timely manner
- ☐ Poor — Complied with reasonable requests from local residents only after District involvement
- ☐ Unacceptable — Work did not consider the local residents or businesses - generally uncooperative

Comment:

4) Cooperation and communication with Subcontractors — **3**

- ☐ Superior — Superior working relationships, no problems
- ☐ Good — Good working relationships, minimal problems, easily resolved, no impact on project
- ☑ Acceptable/NA — Adequate working relationships
- ☐ Poor — Marginal working relationship - problems were resolved with little impact on the project
- ☐ Unacceptable — Problematic environment, conflicts were not easily resolved, impacted the project

Comment:

5) Attendance at project meetings — **3**

- ☐ Superior — Meetings always attended by qualified personnel including subcontractors
- ☐ Good — Meetings usually attended by qualified personnel and subcontractors
- ☑ Acceptable/NA — Sufficient representation by the contractor
- ☐ Poor — Poor attendance from contractor's management staff or poor attendance from subcontractors
- ☐ Unacceptable — Poor attendance and or preparation, resulting in ineffective meetings

Comment:

COOPERATION Summary

Average Score (Total / #questions)	=	**3.0**	**Overall COOPERATION Rating**	=	**Acceptable**	**TOTAL**	**15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

MANAGEMENT OF JOB SITE CONDITIONS

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Compliance with defined project limits – no disturbances beyond project limit **3**

☐ Superior	Extreme care to prevent disturbance to areas outside the project limits (including site runoff)	*Comment:*
☐ Good	Above average care to mark out and or clarify the project area	
☑ Acceptable/NA	Work generally confined to the project limits	
☐ Poor	Minor damage to areas beyond the project limits, tree, bushes, grass areas	
☐ Unacceptable	Damage to or intentional use of areas beyond the project limits	

2) Compliance with erosion and sedimentation control requirements **3**

☐ Superior	Extreme care to prevent any site erosion or transportation of sediments	*Comment:*
☐ Good	Exceeded contract requirements	
☑ Acceptable/NA	Met contract requirements with minimal intervention from District staff	
☐ Poor	Met contract requirements only after District intervention - poor maintenance of silt fencing	
☐ Unacceptable	Failure to protect adjacent properties, catch basins or maintenance of silt fencing	

3) Contractor's ability to keep the project site clean and orderly while the work was in progress, including proper mud and dust control. **3**

☐ Superior	Exceeded expectations for a clean and orderly site	*Comment:*
☐ Good	Site was clean and organized at all times	
☑ Acceptable/NA	Met contract requirements with minimal prompting from District staff	
☐ Poor	Met contract requirements only after repeated prompting from District staff	
☐ Unacceptable	Site not kept clean or organized, excessive mud and dust disturbed local residents/town officials	

MANAGEMENT OF JOB SITE CONDITIONS Summary

Average Score (Total / #questions)	=	**3.0**	**Overall "Job Site" Rating**	**Acceptable**	**TOTAL** **9**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

CLAIMS - FINANCIAL MANAGEMENT

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Number and cause of change orders — **3**

☐ Superior	Contractor plans work in advance to mitigate changes and reduce unnecessary project costs	*Comment:*
☐ Good	Contractor works to mitigate the number of changes	
☑ Acceptable/NA	Contractor follows contract requirements for change orders	
☐ Poor	Contractor requests change orders for incidental work - work included in bid items	
☐ Unacceptable	Contractor continually argues about the scope of work to receive unreasonable change orders	

2) Notification of possible claims — **3**

☐ Superior	District is notified in advance of potential claims and options to mitigate the claim	*Comment:*
☐ Good	Open communication with the District, resulting in early notice of potential claims	
☑ Acceptable/NA	District is notified in advance of potential claims	
☐ Poor	District is notified of foreseeable claims as the situation is occurring	
☐ Unacceptable	District is notified of claims after the work has been completed	

3) Costs associated with change order work (manner in which Contractor determines price) — **3**

☐ Superior	Change order quotes are always reasonable and timely with documentation supporting costs	*Comment:*
☐ Good	Change order quotes are generally fair, willingness to compromise on a fair price	
☑ Acceptable/NA	Willingness to negotiate and work towards an acceptable price	
☐ Poor	Negotiations are drawn out and time consuming, initial price quotes are intentionally high	
☐ Unacceptable	Difficult or unwilling to negotiate or compromise - unreasonable/unrealistic prices	

4) Accuracy of Contractor's billing — **3**

☐ Superior	No errors, accurate representation of work completed, clear and concise	*Comment:*
☐ Good	Accurate representation of work completed	
☑ Acceptable/NA	Few minor errors, quickly resolved	
☐ Poor	Occasional minor errors, poor format, unorganized	
☐ Unacceptable	Frequent errors, difficult to resolve, misrepresentation of work completed	

5) Payment to Subcontractors and/or Suppliers — **3**

☐ Superior	All payments are made promptly and in accordance with the contract	*Comment:*
☐ Good	Payments are made promptly	
☑ Acceptable/NA	No issues are raised by any Subcontractors or Suppliers regarding payment problems	
☐ Poor	Subcontractors and Suppliers notified the District of late payments for work or materials	
☐ Unacceptable	Subcontractors and Suppliers notified the District of non-payment for work or materials	

CLAIMS - FINANCIAL MANAGEMENT Summary

Average Score (Total / #questions)	=	**3.0**	**Overall "Claims & Financial" Rating** =	**Acceptable**	**TOTAL**	**15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation

SUMMARY SHEET

Contractor: **ABC Construction**

Project Title: **Maple Avenue Sanitary Sewer Replacement and Rehabilitation Name of Project Windsor, CT**

Contract No: **2013-04** Evaluation: **50% Completion**

	Performance Category:	Total Points	Average Score	Rating
1)	**COMPETENCE**	15	3.0	Acceptable
2)	**MANAGEMENT OF JOB SITE SAFETY**	15	3.0	Acceptable
3)	**WORKMANSHIP**	15	3.0	Acceptable
4)	**PROSECUTION & TIMELY COMPLETION OF WORK** Organization and Management of Resources	15	3.0	Acceptable
5)	**COOPERATION** Relations with Public and Local Officials	15	3.0	Acceptable
6)	**MANAGEMENT OF JOB SITE CONDITIONS**	9	3.0	Acceptable
7)	**CLAIMS - FINANCIAL MANAGEMENT**	15	3.0	Acceptable
	TOTAL:	99		
	Average Overall Score / Performance Rating:		3.0	**Acceptable**

OVERALL EVALUATION - PASS / FAIL **PASS**

Overall Evaluation (Pass / Fail) Rating is based on the overall performance rating receiving a rating of "Acceptable" or better AND receiving a rating of "Acceptable" or better in at least six of the seven performance categories. Ratings of "Unacceptable" or "Poor" in any two performance categories results in a failure of the overall evaluation regardless of the Average Overall Score.

PREPARED BY: _____ DATE: _____
Construction Manager

REVIEWED BY: _____ DATE: _____
Construction Inspector

REVIEWED BY: _____ DATE: _____
Manager of Environment, Health & Safety

REVIEWED BY: _____ DATE: _____
Project Manager

APPROVED BY: _____ DATE: _____
Deputy CEO, Engineering and Operations

THE METROPOLITAN DISTRICT

CONTRACTOR PERFORMANCE EVALUATION

Contract No.: **2013-04**

Title: **Maple Avenue Sewer Replacement and Rehabilitation**
Windsor, CT

Contractor: **ABC Construction**

Address: **555 Main Street**
Hartford, CT
06142

100% COMPLETION

MDC

The Metropolitan District
555 Main Street
Hartford, Connecticut 06142-0800

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

COMPETENCE

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Overall knowledge of the type of work (sewer construction, plant upgrade, water main installation, etc.) - execution of the type(s) of construction required **3**

- ☐ Superior — Extremely knowledgeable and efficient with a virtual command for the work required
- ☐ Good — Skilled in the work - strong understanding for the minor details involved in the construction
- ☑ Acceptable/NA — Competent and capable to perform this type of work
- ☐ Poor — Inexperienced with the type of work - lack strong understanding of necessary concepts
- ☐ Unacceptable — Unskilled and unfamiliar with the type of work

Comment:

2) Knowledge of the project **3**

- ☐ Superior — Extremely knowledgeable and well-informed about the project to the finest detail
- ☐ Good — Knowledgeable and familiar with all aspects of the project
- ☑ Acceptable/NA — General understanding of the entire project
- ☐ Poor — Lack of knowledge on specific areas of the project
- ☐ Unacceptable — General lack of understanding of the project

Comment:

3) Adherence to plans and specifications **3**

- ☐ Superior — Strict adherence to the plans and specifications
- ☐ Good — General conformance to the plans and specifications - very minor approved deviations
- ☑ Acceptable/NA — Occasional deviations from the plans and specifications - alternate products, etc.
- ☐ Poor — Deviations from the plans and specifications, inferior product submittals, design modifications
- ☐ Unacceptable — Willful disregard for the plans and specifications

Comment:

4) Competence and professionalism of the Project Manager and Superintendent **3**

- ☐ Superior — Extremely knowledgeable, cooperative, professional, organized and prepared at all times
- ☐ Good — Knowledgeable and cooperative - easy to work with
- ☑ Acceptable/NA — Competent and capable to perform their duties
- ☐ Poor — Not fully qualified to hold the position for the type of work required or size of contract
- ☐ Unacceptable — Lacking skills necessary to properly perform required tasks

Comment:

5) Competence and professionalism of the work force **3**

- ☐ Superior — Extremely knowledgeable, efficient, skilled and courteous at all times
- ☐ Good — Knowledgeable and efficient
- ☑ Acceptable/NA — Capable of performing the necessary construction
- ☐ Poor — Unfamiliar with the proper or standard construction techniques - difficult to work with
- ☐ Unacceptable — Uncooperative, problematic, and difficult - unskilled with work required

Comment:

COMPETENCE Summary

Average Score (Total / #questions)	=	**3.0**	**Overall COMPETENCE Rating** =	**Acceptable**	**TOTAL** **15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

MANAGEMENT OF JOB SITE SAFETY

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Contractor's actions in creating a safe job site and meeting safety responsibilities of the contract **3**

☐ Superior	Met and exceeded all criteria of the safety responsibilities within the contract	*Comment:*
☐ Good	Created a safe job site and met safety responsibilities within the contract	
☑ Acceptable/NA	Met basic safety requirements within the contract	
☐ Poor	Created a safe job site and met safety responsibilities within the contract only after repeated prompting by the MDC	
☐ Unacceptable	Contractor did not meet requirements for creating a safe job site nor met safety responsibilities within the contract	

2) Contractor's performance in preventing injuries **3**

☐ Superior	Contractor completed project with no employee injuries	*Comment:*
☐ Good	Contractor completed project with only minor injuries, not requiring medical treatment	
☑ Acceptable/NA	Contractor completed project with employee injuries requiring medical treatment, but no lost work days	
☐ Poor	Contractor completed project with injuries resulting in restricted duty	
☐ Unacceptable	Contractor completed project with more than one injury resulting in lost work days	

3) Contractor's actions in reporting all accidents, incidents and injuries **3**

☐ Superior	Contractor reported all accidents, incidents and injuries immediately to MDC Inspector or MDC Project Engineer	*Comment:*
☐ Good	Contractor reported all accidents, incidents and injuries within 24 hrs.	
☑ Acceptable/NA	Contractor reported all accidents, incidents and injuries within 48 hrs.	
☐ Poor	Contractor reported all accidents, incidents and injuries only if witnessed by District personnel	
☐ Unacceptable	Contractor did not report accidents, incidents and injuries until prompted by the District	

4) Maintenance and protection of traffic **3**

☐ Superior	Minimal impact on traffic, provided a safe work environment for employees, motorists and pedestrians, well maintained signs, etc.	*Comment:*
☐ Good	Minor impact on traffic, provided a safe work environment for employees, motorists and pedestrians, well maintained signs, etc.	
☑ Acceptable/NA	Provided a safe work environment	
☐ Poor	Signage was not clear to drivers, traffic patterns caused delays	
☐ Unacceptable	Failure to provide a safe work environment, poor signage, failure to maintain signs and cones	

5) Contractor's ability to work safely and in accordance with OSHA regulations and the MDC Contractor Safety Program without prompting from District personnel **3**

☐ Superior	Contractor followed their company safety program and complied with the elements of the MDC Contractor Safety Program and OSHA regulations	*Comment:*
☐ Good	Compliance was met only after prompting from District personnel	
☑ Acceptable/NA	Contractor's safety performance required a formal meeting to discuss safety concerns	
☐ Poor	A stop work order was issued to contractor for a non-compliance safety issue	
☐ Unacceptable	Contractor was issued an OSHA citation for a safety violation on this project	

MANAGEMENT OF JOB SITE SAFETY Summary

Average Score (Total / #questions)	=	**3.0**	**Overall SAFETY Rating** =	**Acceptable**	**TOTAL**	**15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

WORKMANSHIP

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Adherence to District and industry standards — **3**

☐ Superior	All work completed in strict conformance to District standards	*Comment:*
☐ Good	Work generally completed in conformance with District or industry standards	
☑ Acceptable/NA	Work meets the general intent of the District's standards (pipe bedding, materials, patching, etc.)	
☐ Poor	Work meets industry standards but fails to meet specific District standards	
☐ Unacceptable	Work or portions of the work fail to meet District or industry standards for quality	

2) Effectiveness of Contractor's quality control measures — **3**

☐ Superior	Work completed properly the first time without the need for re-work or punch list items	*Comment:*
☐ Good	Work completed properly without the need for District prompting.	
☑ Acceptable/NA	Work completed with minor re-work - required minimal prompting / punch lists to correct work	
☐ Poor	Several work items requiring District intervention to meet contract requirements	
☐ Unacceptable	Contractor failed to oversee or correct work without significant prompting from the District	

3) Accuracy of the work — **3**

☐ Superior	All work completed in strict conformance to the plans with exacting tolerances	*Comment:*
☐ Good	All work completed in conformance to the plans - straight lines and grades	
☑ Acceptable/NA	Work meets acceptable tolerances	
☐ Poor	Failure to meet acceptable tolerances - items slightly bent or bowed, improper slopes, etc.	
☐ Unacceptable	Items consistently or severely - misaligned, bent or bowed, reverse or flat slopes, etc.	

4) Overall quality of the final product — **3**

☐ Superior	Overall construction / final product is superior - exceeds industry standards	*Comment:*
☐ Good	Overall construction / final product is above average industry standards	
☑ Acceptable/NA	Meets industry standard	
☐ Poor	Final product shows evidence of repairs, re-work, patching, etc.	
☐ Unacceptable	Final product does not meet District or commonly accepted industry standards	

5) Ability of the work to pass necessary testing — **3**

☐ Superior	Tests passed on the first time without the need for any corrective measures	*Comment:*
☐ Good	Majority of work passed testing the first time	
☑ Acceptable/NA	Work is able to pass necessary testing without significant corrective work or repetitive testing	
☐ Poor	Work passes testing after significant re-work or multiple tests	
☐ Unacceptable	Majority of the work can not pass testing without significant re-work or multiple tests	

WORKMANSHIP Summary

Average Score (Total / #questions)	=	**3.0**	**Overall WORKMANSHIP Rating** =	**Acceptable**	**TOTAL**	**15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

DILIGENT PROSECUTION AND TIMELY COMPLETION OF WORK

~ORGANIZATION AND MANAGEMENT OF RESOURCES~

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Ability to progress the work without interruptions or shutdowns (work stoppages) — **3**

- ☐ Superior — Maintains a consistent work force and work hours for the duration of the project
- ☐ Good — Work force is adequate at all times, requires periodic overtime to meet schedule
- ☑ Acceptable/NA — Work progresses without significant shutdowns
- ☐ Poor — Work stoppages required due to problems with material deliveries or subcontractors availability
- ☐ Unacceptable — Project is delayed without reason or due to contractors forces working on other projects

Comment:

2) Availability of staff, material and equipment to meet project requirements — **3**

- ☐ Superior — Staff, equipment and materials were always available to meet the project schedule
- ☐ Good — Staff, equipment and materials were generally available to meet the project schedule
- ☑ Acceptable/NA — Staff, material and equipment shortages did not result in project delays
- ☐ Poor — Delays and/or multiple scheduling changes to adjust for shortage of staff, material or equipment
- ☐ Unacceptable — Several delays resulting from shortage of staff, material or equipment

Comment:

3) Adherence to project schedule including project completion — **3**

- ☐ Superior — Maintains an accelerated project schedule resulting in the early completion of the project
- ☐ Good — Completes project on time or ahead of schedule
- ☑ Acceptable/NA — Completes project within allotted contract time
- ☐ Poor — Project schedule not met or adhered to - requires time extensions to complete work
- ☐ Unacceptable — Consistently behind schedule - does not complete the project within allotted time

Comment:

4) Submission and quality of project schedule and updates — **3**

- ☐ Superior — Accurate and complete schedule including updates submitted in accordance with contract
- ☐ Good — Schedule and updates submitted in timely manner - accurate and realistic updates etc.
- ☑ Acceptable/NA — Schedule and updates submitted upon request of the District
- ☐ Poor — Inaccurate or unrealistic schedule requiring consistent updates
- ☐ Unacceptable — Failure to provide a realistic or accurate schedule or refusal to update/follow the schedule

Comment:

5) Submission of Shop Drawings to Prevent Delays in the Work — **3**

- ☐ Superior — All submissions on time, complete and meeting requirements of the specifications
- ☐ Good — All submissions on time and complete
- ☑ Acceptable/NA — Majority of submissions on time - project was not delayed due to shop drawing process
- ☐ Poor — Late submissions requiring Contractor to request accelerated review from the Engineer
- ☐ Unacceptable — Few submissions on time resulting in project delays

Comment:

DILIGENT PROSECUTION AND TIMELY COMPLETION OF WORK Summary

Average Score (Total / #questions)	=	**3.0**	**Overall "Time/Prosecution" Rating**	=	**Acceptable**	**TOTAL** **15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

COOPERATION

~Relations with Public and Local Officials~

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Response to District directives — **3**

- ☐ Superior — All directives are responded to immediately
- ☐ Good — All directives are responded to in a timely manner without additional prompting
- ☑ Acceptable/NA — Most directives are responded to in a timely manner
- ☐ Poor — Slow response or argumentative on several directives
- ☐ Unacceptable — Non-responsive or argumentative in responding to most directives

Comment:

2) Cooperation with local officials — **3**

- ☐ Superior — Strong working relationship - worked together, coordinated inspection requirements
- ☐ Good — Good working relationship - willingness to work with town inspection staff
- ☑ Acceptable/NA — Met all permit and or contract requirements
- ☐ Poor — Difficult at times, met minimal requirements
- ☐ Unacceptable — Generally uncooperative, argumentative or unprofessional

Comment:

3) Cooperation and resolution to concerns of local residents and/or businesses — **3**

- ☐ Superior — Always displayed concern for residents, planned work to minimize impact to neighborhood
- ☐ Good — Displayed concern for residents, worked to minimize impacts to neighborhood
- ☑ Acceptable/NA — Cooperated with reasonable requests by local residents and businesses in a timely manner
- ☐ Poor — Complied with reasonable requests from local residents only after District involvement
- ☐ Unacceptable — Work did not consider the local residents or businesses - generally uncooperative

Comment:

4) Cooperation and communication with Subcontractors — **3**

- ☐ Superior — Superior working relationships, no problems
- ☐ Good — Good working relationships, minimal problems, easily resolved, no impact on project
- ☑ Acceptable/NA — Adequate working relationships
- ☐ Poor — Marginal working relationship - problems were resolved with little impact on the project
- ☐ Unacceptable — Problematic environment, conflicts were not easily resolved, impacted the project

Comment:

5) Attendance at project meetings — **3**

- ☐ Superior — Meetings always attended by qualified personnel including subcontractors
- ☐ Good — Meetings usually attended by qualified personnel and subcontractors
- ☑ Acceptable/NA — Sufficient representation by the contractor
- ☐ Poor — Poor attendance from contractor's management staff or poor attendance from subcontractors
- ☐ Unacceptable — Poor attendance and or preparation, resulting in ineffective meetings

Comment:

COOPERATION Summary

Average Score (Total / #questions)	=	**3.0**	**Overall COOPERATION Rating** =	**Acceptable**	**TOTAL**	**15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

MANAGEMENT OF JOB SITE CONDITIONS

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Compliance with defined project limits – no disturbances beyond project limit **3**

☐ Superior	Extreme care to prevent disturbance to areas outside the project limits (including site runoff)	*Comment:*
☐ Good	Above average care to mark out and or clarify the project area	
☑ Acceptable/NA	Work generally confined to the project limits	
☐ Poor	Minor damage to areas beyond the project limits, tree, bushes, grass areas	
☐ Unacceptable	Damage to or intentional use of areas beyond the project limits	

2) Compliance with erosion and sedimentation control requirements **3**

☐ Superior	Extreme care to prevent any site erosion or transportation of sediments	*Comment:*
☐ Good	Exceeded contract requirements	
☑ Acceptable/NA	Met contract requirements with minimal intervention from District staff	
☐ Poor	Met contract requirements only after District intervention - poor maintenance of silt fencing	
☐ Unacceptable	Failure to protect adjacent properties, catch basins or maintenance of silt fencing	

3) Contractor's ability to keep the project site clean and orderly while the work was in progress, including proper mud and dust control. **3**

☐ Superior	Exceeded expectations for a clean and orderly site	*Comment:*
☐ Good	Site was clean and organized at all times	
☑ Acceptable/NA	Met contract requirements with minimal prompting from District staff	
☐ Poor	Met contract requirements only after repeated prompting from District staff	
☐ Unacceptable	Site not kept clean or organized, excessive mud and dust disturbed local residents/town officials	

MANAGEMENT OF JOB SITE CONDITIONS Summary

Average Score (Total / #questions)	=	**3.0**	**Overall "Job Site" Rating**	**Acceptable**	**TOTAL** **9**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation Work Sheet

CLAIMS - FINANCIAL MANAGEMENT

Superior = 5 Good = 4 Acceptable-N/A = 3 Poor = 2 Unacceptable = 1

1) Number and cause of change orders — **3**

☐ Superior	Contractor plans work in advance to mitigate changes and reduce unnecessary project costs	*Comment:*
☐ Good	Contractor works to mitigate the number of changes	
☑ Acceptable/NA	Contractor follows contract requirements for change orders	
☐ Poor	Contractor requests change orders for incidental work - work included in bid items	
☐ Unacceptable	Contractor continually argues about the scope of work to receive unreasonable change orders	

2) Notification of possible claims — **3**

☐ Superior	District is notified in advance of potential claims and options to mitigate the claim	*Comment:*
☐ Good	Open communication with the District, resulting in early notice of potential claims	
☑ Acceptable/NA	District is notified in advance of potential claims	
☐ Poor	District is notified of foreseeable claims as the situation is occurring	
☐ Unacceptable	District is notified of claims after the work has been completed	

3) Costs associated with change order work (manner in which Contractor determines price) — **3**

☐ Superior	Change order quotes are always reasonable and timely with documentation supporting costs	*Comment:*
☐ Good	Change order quotes are generally fair, willingness to compromise on a fair price	
☑ Acceptable/NA	Willingness to negotiate and work towards an acceptable price	
☐ Poor	Negotiations are drawn out and time consuming, initial price quotes are intentionally high	
☐ Unacceptable	Difficult or unwilling to negotiate or compromise - unreasonable/unrealistic prices	

4) Accuracy of Contractor's billing — **3**

☐ Superior	No errors, accurate representation of work completed, clear and concise	*Comment:*
☐ Good	Accurate representation of work completed	
☑ Acceptable/NA	Few minor errors, quickly resolved	
☐ Poor	Occasional minor errors, poor format, unorganized	
☐ Unacceptable	Frequent errors, difficult to resolve, misrepresentation of work completed	

5) Payment to Subcontractors and/or Suppliers — **3**

☐ Superior	All payments are made promptly and in accordance with the contract	*Comment:*
☐ Good	Payments are made promptly	
☑ Acceptable/NA	No issues are raised by any Subcontractors or Suppliers regarding payment problems	
☐ Poor	Subcontractors and Suppliers notified the District of late payments for work or materials	
☐ Unacceptable	Subcontractors and Suppliers notified the District of non-payment for work or materials	

CLAIMS - FINANCIAL MANAGEMENT Summary

Average Score (Total / #questions)	=	**3.0**	**Overall "Claims & Financial" Rating** =	**Acceptable**	**TOTAL**	**15**

THE METROPOLITAN DISTRICT - Contractor Performance Evaluation

SUMMARY SHEET

Contractor: **ABC Construction**

Project Title: **Maple Avenue Sewer Replacement and Rehabilitation Windsor, CT**

Contract No: **2013-04** Evaluation: **100% Completion**

	Performance Category:	Total Points	Average Score	Rating
1)	**COMPETENCE**	15	3.0	Acceptable
2)	**MANAGEMENT OF JOB SITE SAFETY**	15	3.0	Acceptable
3)	**WORKMANSHIP**	15	3.0	Acceptable
4)	**PROSECUTION & TIMELY COMPLETION OF WORK** Organization and Management of Resources	15	3.0	Acceptable
5)	**COOPERATION** Relations with Public and Local Officials	15	3.0	Acceptable
6)	**MANAGEMENT OF JOB SITE CONDITIONS**	9	3.0	Acceptable
7)	**CLAIMS - FINANCIAL MANAGEMENT**	15	3.0	Acceptable
	TOTAL:	99		
	Average Overall Score / Performance Rating:		3.0	**Acceptable**

OVERALL EVALUATION - PASS / FAIL **PASS**

Overall Evaluation (Pass / Fail) Rating is based on the overall performance rating receiving a rating of "Acceptable" or better AND receiving a rating of "Acceptable" or better in at least six of the seven performance categories. Ratings of "Unacceptable" or "Poor" in any two performance categories results in a failure of the overall evaluation regardless of the Average Overall Score.

PREPARED BY: _____ DATE: _____
Construction Manager

REVIEWED BY: _____ DATE: _____
Construction Inspector

REVIEWED BY: _____ DATE: _____
Manager of Environment, Health & Safety

REVIEWED BY: _____ DATE: _____
Project Manager

APPROVED BY: _____ DATE: _____
Deputy CEO, Engineering and Operations

RECEIPT
ACKNOWLEDGED BY: _____ DATE: _____
Chief Executive Officer

SECTION 01450

QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Quality assurance and control of the Work
2. Testing and inspection services
3. Product test reports
4. Manufacturer's field service

B. Related Sections

1. Section 01451, Independent Testing Services
2. Testing requirements are described in various Sections of the Project Manual.

1.02 SUBMITTALS

A. Product test reports

1.03 QUALITY ASSURANCE

The Contractor shall:

A. Monitor quality control over Suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality.

B. Comply fully with instructions. Should these instructions conflict with the Specifications, request clarification from the Owner before proceeding.

C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or requirements indicate higher standards or more precise workmanship.

1.04 TESTING SERVICES FURNISHED BY CONTRACTOR

A. Furnish all testing services required for materials and equipment proposed to be used in the Work, and quality control tests made in the field including:

1. Concrete materials and mix designs.

2. Concrete in place.

3. Standard proctor analyses for all borrow materials used on the Project.

4. Standard proctor analysis of all material to be compacted during surface preparation and fine grading and compaction work.

5. Sieve analyses for all borrow materials used on the Project.

6. Soil structure and nutrient analyses for all loam and topsoil used on the Project.

7. Compaction tests during trench backfilling and compaction, rough grading and site preparation, fine grading and compaction of roadway and sidewalk subgrades, and placement of roadway and sidewalk subbase materials.

8. Design of asphalt mixtures.

9. Asphalt in place.

10. All other tests and engineering data as required in the Contract Documents.

B. Testing agencies must meet the requirements of Section 01451.

C. An independent commercial testing laboratory, with current Connecticut certification, shall perform all tests that require the services of a laboratory to determine compliance with the Contract Documents. Independent testing laboratory requirements are defined under Section 01451.

D. Secure and deliver the required number of samples to the laboratory as required by the Contract Documents.

E. Notify Owner and Engineer of time, location and material being sampled.

F. Schedule necessary testing laboratory services.

G. Furnish written reports of each test within 48 hours of completion of testing.

H. Notify the Engineer 48 hours prior to operations requiring inspections and laboratory testing services so the Engineer may witness testing. All failed test areas shall be re-worked and re-tested until passing results are obtained.

I. The Owner may hire its own independent testing laboratory for quality control tests made in the field or laboratory on materials and equipment during and after their incorporation in the Work. Cooperate with the Owner and independent testing laboratory and furnish samples of materials, design, mix, equipment, tools, storage, and assistance as requested.

J. Re-work all failed test areas until passing results are obtained. All re-tests required as a result of the Contractor's failure to perform the work in accordance with the Contract Documents shall be at the Contractor's expense.

1.05 CODE COMPLIANCE TESTING

A. Provide inspections and tests required by codes or ordinances, or by a legally constituted authority having jurisdiction over the Work.

1.06 PRODUCT TEST REPORTS

A. Submit 2 copies of product test reports where required by the Contract Documents.

1.07 MANUFACTURERS' FIELD SERVICE

A. Provide qualified field service and installation personnel from material and equipment suppliers familiar with site conditions, installation techniques, quality of workmanship, equipment start-up, adjustment, and testing where required by the Contract Documents. Observations are to be reported and incorporated in the Work procedures.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION

SECTION 01451

INDEPENDENT TESTING SERVICES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Independent testing services including geotechnical and concrete inspection and testing

2. Testing laboratory services

B. Related Sections

1. Section 01450, Quality Control

2. Section 02200, Earthwork

3. Section 02202, Special Trench Refill

4. Section 02230, Granular Materials

5. Section 02510, Temporary and Permanent Paved Surface Restoration

6. Section 03300, Concrete

7. Section 03302, Miscellaneous Concrete

1.02 REFERENCES

A. General

1. ASTM E329 -Standard Specifications for Agencies Engaged in the Testing Inspection of Materials used in Construction.

B. Soil Testing

1. American Association of State Highway and Transportation Officials (AASHTO).

C. Concrete Testing

1. Cement and Concrete Reference Laboratory (CCRL)

2. Connecticut DOT testing requirements

1.03 SUBMITTALS

A. Qualifications, experience, and certifications of each proposed testing service.

B. Certificate of calibration for testing equipment.

1.04 QUALITY ASSURANCE

A. General

1. Comply with the requirements of Section 01450, Quality Control, for testing and inspection requirements.

2. Testing services shall have the following general qualifications:

a. Minimum 5 years as a firm with the type of testing specified.

b. Ability to provide timely field testing services to minimize the impact of the testing requirements on construction progress.

c. Certification to perform the specified services in the state in which the Work is to be performed.

3. Testing services proposed by the Contractor shall be subject to review by the Owner and Engineer. Any testing firm not acceptable to the Owner or Engineer will be rejected.

B. All testing agencies and laboratories must meet the requirements of ASTM

C. Testing company shall have been in business for a minimum of the last 5 years providing applicable testing services.

D. Testing equipment shall be calibrated at maximum 12 month intervals by devices of accuracy traceable to National Bureau of Standards. Submit copy of certificate of calibration made by accredited calibration agency.

E. Testing shall be in accordance with applicable codes and regulations referenced in individual Specification Sections, and with selected standards of ASTM.

PART 2 – PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 TESTING SERVICES - GENERAL

The Contractor shall:

A. Provide testing services meeting the following:

1. Provide qualified personnel promptly on notice.

2. Perform inspections required by the Contract Documents. Sample and test materials and observe methods of construction to determine compliance with applicable standards and with the requirements of the Contract Documents.

3. Take specimens and samples for testing, as required in individual Specification Sections. Provide all sampling equipment and deliver all specimens and Samples.

4. Promptly notify the Owner and the Engineer of irregularities or deficiencies in the Work which are observed during inspection.

5. Promptly submit 2 copies of reports of inspections and tests to the Engineer including:

   a. Date issued

   b. Project title and number

   c. Testing laboratory or agency name and address

   d. Name and signature of inspector

   e. Date of inspection or sampling

   f. Record of temperature and weather

   g. Date of test

   h. Identification of product and Specification Section Location of Project Type of inspection or test

   k. Results of tests and observations regarding compliance with Contract Documents

B. Perform additional tests and services as required to assure compliance with the Contract Documents.

C. Obtain Owner's approval of testing laboratory before performing testing services.

D. Coordinate with testing laboratory

3.02 GEOTECHNICAL TESTING

A. The Contractor shall provide field testing and laboratory for geotechnical soil testing required in Sections 02200, 02202, and 2230.

3.03 CONCRETE TESTING

A. The Contractor shall provide qualified independent field and laboratory testing service to perform the concrete testing required in Division 3 of the specifications.

B. The concrete testing laboratory shall have been inspected by the State of Connecticut within the past 5 years.

C. The testing laboratory shall be a licensed concrete testing laboratory by the State of Connecticut.

D. Field testing technicians shall have a Class A concrete technician license as certified by the State of Connecticut.

3.04 ANALYTICAL TESTING OF AREAS THAT MAY BE CONTAMINATED

A. The testing laboratory shall be a licensed laboratory in the State of Connecticut.

B. The testing laboratory shall be able to perform all analyses and provide analytical reports in accordance with the Department of Energy and Environmental Protection’s Reasonable Confidence Protocols.

3.05 COORDINATION WITH TESTING LABORATORY

The Contractor shall:

A. Provide testing laboratory personnel access to site and manufacturer's operations.

B. Provide laboratory with representative samples of materials to be tested in required quantities.

C. Furnish labor and facilities:

1. To provide access to Work to be tested.

2. To facilitate inspections and tests.

3. For laboratory's exclusive use for storage and curing of test samples.

4. To provide forms for preparing concrete test beams and cylinders.

D. Notify laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.

E. Arrange with laboratory and pay for additional inspections, samples, and tests required for Contractor's convenience.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 TEMPORARY OFFICES FOR CONTRACTOR AND ENGINEER

A. Temporary offices shall be established within the Project limits where approved by the Owner/Engineer, adequately furnished, and maintained in a clean, orderly condition by the Contractor. The Contractor's authorized representative shall be present in the field office at all times while work is in progress. If a full time Project Manager is a contract requirement, he/she shall be considered the Contractor's authorized representative and a separate office will be provided for the Project Manager and maintained throughout the contract period. Instructions received there from the Owner/Engineer shall be considered as delivered to the Contractor.

B. Contractor shall provide a separate building of at least 200 sq ft of floor space for the exclusive use of the Owner/Engineer throughout the period of construction. This space shall consist of separate offices for the Owner's field engineer and inspector(s) and separate space for meetings/conferences. The temporary office shall be weathertight, have a tight floor at least 8-in off the ground and shall be insulated all around with rigid insulation board not less than 1/2-in thick and suitably ventilated. The office shall have at least three screened windows capable of being opened, a screen door and a solid door provided with cylinder lock and three keys. The office shall be provided with janitorial service on a weekly basis, heating equipment, electrical wiring, outlets and fixtures suitable to light the tables and desk adequately as directed. Provide separate toilet facilities for the exclusive use of the Owner/Engineer. A minimum of four (4) parking spaces shall be provided for the use of the Owner/Engineer.

C. Provide the following furniture and equipment in the Owner/Engineer's office:

1. One plan table, 3-ft by 5-ft and one stool
2. Two (2) Desks about 3-ft by 5-ft with desk chair
3. Four additional chairs
4. Plan rack, as directed
5. Shelves, as directed
6. Four-drawer, filing cabinet with lock
7. Coat rack and hooks

8. Desk calculator

9. Air Conditioner (12,000 BTU)

10. Duplicating machine, Xerox Model 1025I or equal.

11. One conference table (6-ft).

12. Eight folding chairs.

13. Cross-cut shredder with basket, Fellowes Model No. P600C02, or equal.

14. First aid kit suitable for ten people with manual, American White Cross No. K10 or equal.

15. Facsimile machine with surge suppressor.

D. Supply all fuel for heating and pay all utility bills.

E. An approved, suitably constructed and equipped trailer of proper size may be furnished for the Owner/Engineer's office.

1.02 TEMPORARY TELEPHONE

A. Install two telephone lines in the Owner/Engineer's field office for the Owner/Engineer's exclusive use; one voice grade line with caller ID and call waiting features and a second line for a facsimile machine.

B. Provide the telephone with an automatic telephone answering device to record messages when the office is not manned.

C. Pay all cost for installation, maintenance and removal of the telephone service and instruments. The monthly cost of all calls made and received by the Engineer, including toll and long distance calls, shall be paid for by the Contractor for the duration of construction.

1.03 TEMPORARY INTERNET AND DATA ACCESS

A. Provide high speed internet access in the Owner’s field office for the Owner’s exclusive use. High speed internet access shall be capable of a minimum of 1.5 mbps upload and 3.0 mbps download speeds. High speed internet access for Owner’s use shall be Cable, DSL, or T-1 type service.

B. Provide router (wired and wireless) for connection of multiple Owner computers.

C. Pay all costs for installation, maintenance and removal of the high speed internet service and instruments. The monthly cost of high speed internet for exclusive

use by the Owner shall be paid for by the Contractor for the duration of construction.

1.04 TEMPORARY LIGHT AND POWER

A. Furnish temporary light and power, including 220 Volt service for welding, complete with wiring, lamps and similar equipment as required to adequately light all work areas and with sufficient power capacity to meet the reasonable needs of all subcontractors. Make all necessary arrangements with the local electric company for temporary electric service and pay all expenses in connection therewith.

1.05 TEMPORARY HEAT

A. Provide all heat as may be necessary for thawing out and heating the ground or materials and for proper execution, protection and drying out the of work.

1.06 WEATHER PROTECTION

A. Contractor shall furnish, install and maintain temporary heat and enclosures to provide adequate working areas for personnel during the months of November through March.

1.07 TEMPORARY AIR, STEAM AND WATER

A. Provide all air, steam and water, including temporary piping and appurtenances required for cleaning and testing pipelines and equipment. Remove temporary piping and appurtenances upon approval of equipment being tested.

1.08 TEMPORARY SANITARY FACILITIES

A. Provide self-contained, single occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed in a fiberglass or other approved non-absorbent shell. These facilities shall be maintained weekly.

1.09 FIRE EXTINGUISHERS

A. Provide portable UL rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide portable UL rated Class ABC dry chemical extinguishers or a combination of NFPA recommended Classes for the exposure. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

1.10 TEMPORARY FENCING

A. Provide commercial grade chain link fence to prevent trespass by workmen and suppliers onto private property and the public from the construction site.

B. If a trailer is furnished for the Owner's office space, provide 6 foot high fence around Owner's field office. Equip fence with vehicular and pedestrian gates with locks. Provide Owner with 3 sets of keys for such locks.

C. Coordinate location of temporary fencing with Engineer.

1.11 FIRST AID SUPPLIES

A. Based on the size of the crew, provide an adequately stocked first aid kit that is readily available on each work site.

END OF SECTION

THE METROPOLITAN DISTRICT

SECTION 01510

MAINTENANCE OF FLOW IN EXISTING SEWERS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall be responsible for maintaining wastewater flow in all public and private pipes during construction. All by-pass pumping systems shall be manned by the Contractor during non-Working hours, seven (7) days per week as necessary. During the installation and/or rehabilitation of sections of the sewer system, it is required that the Contractor maintain sewage flows in the system and from all abutting properties at all times. No sanitary service shall be interrupted by the Contractor except as absolutely necessary and then for only very short periods of time of no more than thirty (30) minutes and then only when coordinated with the affected property Owner. Except during lining operations where interruption at the street tie-in will be allowed for up to twenty-four (24) hours, when coordinated, by the Contractor, with the affected property Owner. Prior to beginning any by-pass operations, the Contractor shall first obtain a Wastewater By-Pass Permit from the Owner.

B. Provide all labor, equipment, power and materials necessary to maintain flow in existing sewers (including individual house services), and handle existing wastewater flow. Construct and maintain all temporary bypass sewers and be responsible for all by-pass pumping of sewage that may be required to prevent backing up of sewage during installation of all new pipe and manhole and to allow proper inspection and testing of the new Work. The Contractor shall immediately remove and dispose of all offensive matter spilled during the by-pass pumping at his own expense. When the construction process entails sewer lining, the Contractor shall implement an operation that prevents backups into private services and buildings. Work shall be performed as specified in the applicable Work specification including but not limited to notification procedures for reduced flow usage and/or sewage handling in the case of larger consumers that must have laterals maintained 24 hours a day, 7 days a week.

C. When by-pass pumping is required the Contractor shall supply pumps, conduits, power, and other equipment to divert the flow of sewage around the section in which Work is to be performed. The by-pass system shall be, as a minimum, at least 110% of the maximum capacity of the pipes being bypassed. A secondary pump is required to be on hand and within distance of by-pass site so as to maintain flow within the collection system at all times should the primary pump fail.

D. The Contractor shall be required to repair at his own expense any damage to property, public or private, caused by his operations.

E. Wastewater flows from existing sewers shall not be allowed to enter the new facilities or pipes until the new facilities or pipes have been cleaned and tested as required in the Specifications.

F. Should damage of any kind occur to the existing sewers, the Contractor shall at his own expense make repairs to the satisfaction of the Engineer.

G. The Contractor shall not be permitted to overflow, bypass, pump or by any other means convey sewage or drainage to any brook or water course without permission of the Engineer.

H. All procedures for maintaining flows must meet the approval of the Engineer and the Contractor shall be required to submit to the Engineer, for approval, a detailed written plan of all methods of flow maintenance prior to construction or within 5 calendar days following the pre-construction conference, whichever occurs first. The submittal must contain a letter describing the written plan for maintenance of flow including the approximate period of bypass pumping associated with the pipe lining, a list of streets to be impacted, equipment to be used, including back-up equipment, a list of contacts in case of emergencies, and all other information requested by the Engineer or Owner. The Contractor shall submit six (6) copies of this plan for the Owner's use, including sending a copy to the Department of Energy and Environmental Protection. No Work shall commence without submittal and approval of this plan.

I. Refer to Section 01110 for noise limitations.

END OF SECTION

THE METROPOLITAN DISTRICT

SECTION 01561

PEST CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This Section specifies requirements for pest control related activities at all work and staging areas in connection with this Contract. The Contractor shall conduct a Rodent Control Survey and develop a Rodent Control Plan that conforms to the City / Town / State of Connecticut requirements.

B. Rodent Control Survey and Control Plan shall be performed by a certified pest control specialist. A weekly inspection for pest activity and sanitation deficiencies in all work areas, staging areas and adjacent areas shall be included in the Plan.

1.02 SUBMITTALS

A. Prior to the start of construction activity, submit in accordance with Section 01300 a written description of the Rodent Control Survey and Control Plan and procedures to be used. The Rodent Control Plan must be approved by the Engineer [and the Town of Windsor].

B. Three weeks prior to pest control work in the staging areas outside the Contract area, submit the location of the area, the name of the pest control operator, pest control time schedule and products and procedures to be used. Submit before site occupancy a written statement from the pest control operator certifying that the staging areas are rodent-free.

PART 2 – PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 WORK AND STAGING AREAS WITHIN THE CONTRACT AREA

A. Before mobilization begins, provide notification that rodent populations have been effectively controlled by the pest control contractor in the work areas.

B. Following site clearing and before demolition, excavation, or construction, inspect work areas and remove all remaining trash, debris and weeds.

C. Maintain work and staging areas free of trash, garbage, weeds and debris. Provide and enforce proper use of refuse containers to ensure that rodents and other pests are not harbored or attracted.

D. Designate specific locations as lunch and coffee break areas to prevent random disposal of garbage and trash. Keep those areas free of litter and garbage and provide proper refuse containers with lids. Keep refuse containers upright with their lids shut tight.

E. Have all refuse containers emptied daily to maintain site sanitation.

F. Notify the Engineer within 24 hours whenever rodents (rats or mice) or signs of rodent activity (burrows or droppings) are observed in work or staging areas.

3.02 STAGING AREAS OUTSIDE THE CONTRACT AREA

A. Implement pest control at all staging areas that are not areas of this Contract, but that are used in connection with this Contract. Undertake rodent control at least two weeks prior to use of the area and with adequate time to ensure that the site is free of rodent populations (rats and mice) prior to site occupancy. Maintain the site free of rodents throughout the duration of its use.

B. Clear staging areas of trash, debris and weeds prior to occupancy. Initiate those actions only after rodent populations have been effectively controlled.

C. Maintain staging areas free of trash, garbage, weeds and debris. Provide and enforce proper use of refuse containers to ensure that rodents and other pests are not harbored or attracted.

D. Dispose of all garbage or trash associated with food in refuse containers with tight-fitting lids. Have refuse containers emptied twice weekly or more frequently if necessary to maintain site sanitation.

END OF SECTION

SECTION 01562

DUST CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Perform dust control operations whenever necessary or when directed even though other work on the project may be suspended. Dust control on exposed soil in trenches or rights of way shall be generally accomplished by the use of water. Calcium chloride may be used when necessary to control dust nuisance on paved surfaces or sidewalks.

PART 2 - PRODUCTS

2.01 CALCIUM CHLORIDE

A. Calcium Chloride shall conform to the requirements of AASHTO Ml44, Type I or Type II and ASTM "Specification for Calcium Chloride," ASTM D98, latest revision. The calcium chloride shall be packaged in moisture-proof bags or airtight drums marked with the manufacturer's name, name of product, date of manufacture, net weight and percentage of calcium chloride guaranteed by the manufacturer, all legibly marked on each container.

B. Calcium chloride failing to meet the requirements of the aforementioned specifications, or that which has become caked or sticky in shipment, etc., may be subject to rejection at the discretion of the Engineer.

2.02 WATER

A. Water shall be reasonably clean, shall not be salty or brackish, and shall be free from petroleum products, acids, injurious alkalis and vegetable matter or other deleterious material. The water shall be tested in accordance with AASHTO Method T26 (except if water originates from Owner water mains).

B. Where an Owner water supply system is available, the Contractor may utilize water from said supply system for controlling dust; however, prior to the use of such water, the Contractor shall make the necessary arrangements with the MDC Operations Department to install an approved meter for billing purposes to be provided by the Contractor.

2.03 REGULATORY REQUIREMENTS

A. The Contractor shall comply with all the applicable requirements of federal, state, municipal or local conservation/wetlands/watercourses authority having jurisdiction in such matters.

PART 3 - EXECUTION

3.01 DUST CONTROL

A. The Contractor shall utilize predetermined traffic detour routes to reduce dust generation. The Contractor shall utilize such traffic control measures as may be applied to redirect traffic to predetermined alternate routes, in an attempt to reduce dust generation.

B. The Contractor shall maintain as much of the existing vegetation as is practicable in non-paved areas.

C. The Contractor shall utilize phasing of construction as may be practicable to reduce the extent of disturbed area at any given location.

D. The Contractor shall utilize temporary mulching and/or temporary vegetative cover applications in non-paved areas disturbed by construction to reduce the need for dust control.

E. The Contractor shall utilize mechanical sweepers on paved surfaces, as necessary, to prevent dust build-up.

F. Portable rock crushers where allowed and utilized shall be equipped with fine water sprays to control dust.

G. Water utilized for dust control on exposed soil shall be applied with suitable equipment, such as tank trucks, tanks, pipelines or other devices capable of applying a uniform spread of water over the surface receiving treatment. The equipment shall have a suitable device for positive shut-off and regulating the flow of water to permit positive operator control.

H. Where calcium chloride is utilized for dust control on paved surfaces or sidewalks, the calcium chloride shall be either loose dry flakes or granules fine enough to be fed through a spreader or similar device, at a rate that will keep the treated surface moist, but not cause pollution or plant damage. Calcium chloride shall be applied utilizing equipment that permits uniform distribution over the entire area receiving treatment. The Contractor shall exercise the proper precautionary procedures and measures regarding the storage, handling and application of calcium chloride in concert with the manufacturer's recommendations, the products "Material Safety Data."

I. The Contractor shall be responsible for taking all the necessary precautions to avoid entry of calcium chloride into sewers and drains, brooks, streams or other water bodies and drinking water sources.

J. Repetitive treatments of dust control measures shall be applied as needed or directed to accomplish dust control, at no additional cost to the Owner.

K. The Contractor shall construct and maintain an anti-tracking pad at the entrance to any and all off-road work or staging areas. The Contractor shall remove the anti-tracking pad once the project is completed and restore the affected land in accord with this Specification.

END OF SECTION

SECTION 01570

MAINTENANCE AND PROTECTION OF TRAFFIC (MPT)

PART 1 – GENERAL

1.01 SUMMARY

A. The Contractor shall provide, install, maintain, adjust, remove, store and transport all the necessary or required construction signs, barricades, traffic cones, traffic drums, sign supports, concrete barrier curbs, impact attenuation systems, steel plates, pavement markings, black out tape, permanent traffic signs, traffic signals, vehicle loop detectors and all other traffic control items as is necessary for the maintenance and protection of vehicular and pedestrian traffic. The Contractor shall take all the necessary measures and precautions for the maintenance and protection of vehicular and pedestrian traffic, both in the immediate work zones, and throughout the overall project area as deemed necessary by the Municipality (with which the work is located in), Connecticut Department of Transportation (CTDOT) (if work is occurring on a state road) and/or The Owner. The Contractor shall furnish all the labor, equipment, tools, materials and services required to perform all the work. The duration of this work shall be from the date any work is started on the contract site, including mobilization and until the date of final contract acceptance. Temporary material and components that are furnished by the Contractor shall remain the property of the Contractor.

B. Unless other provisions are made on the plans or in these contract documents, the Contractor shall keep the roadway under construction open to traffic for the full length of the project and shall provide a sufficient number of travel lanes and pedestrian pass ways to move traffic and pedestrians. The travel lanes and pedestrian pass ways shall be kept reasonably smooth and in suitable condition at all times. The Contractor shall conduct its operation to ensure the safety and convenience of travelers and abutting property owners.

C. Maintenance and Protection of Traffic (MPT) shall include a lump sum at the contract unit price. The lump sum portion shall include all costs for labor, equipment and services involved in the erection, maintenance, moving, adjusting, cleaning, relocating and storing of signs, barricades, drums, traffic cones and other traffic items furnished by the Contractor as well as all costs of labor and equipment involved in performing the maintenance of traffic in accordance with the approved traffic control (MPT) plans. This item shall also include furnishing, installing, maintaining and removing construction fencing as shown on the drawings or as directed by the Engineer.

D. The MPT will also include the following sub items which will be paid for separately:

1. Construction Signs – Encapsulated Lens Reflective Sheeting (sf.)
2. Traffic Cone (ea.)
3. Traffic Drum (ea.)
4. Construction Barricade – Type III(other types) (ea.)
5. Temporary Pained Pavement Markings (4 in white, 4 in yellow, 12 in white, symbols) (lf. or sf.)

1.02 RELATED WORK SECTIONS:

The following sections are referenced in or related to this section.

A. Section 01010: Summary of Work
B. Section 01014: Special Work Sequences and Suggested Sequence of Construction
C. Section 01025: Measurement and Payment
D. Section 01044: Progress
E. Section 01046: Control of Work
F. Section 01082: Project Signs
G. Section 01100: Special Provisions
H. Section 01300: Submittals
I. Section 01576: Policing
J. Section 02515: Concrete Walkways
K. Section 02576: Pavement Repair and Resurfacing

1.03 REFERENCES

A. State of Connecticut, Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 816 dated 2004 including all additions and revisions. Including but not limited to the following from Form 816:

1. Section 8.22 Temporary Precast Concrete Barrier Curb
2. Section 9.71 Maintenance and Protection of Traffic
3. Section 12.09 Painted Pavement Markings
4. Section 12.20 Construction Signs –Encapsulated Lens
5. Division III – Materials Section

B. Owner Standard Specifications, latest revision.
C. 2009 Manual of Uniform Traffic Control Devices (MUTCD), as amended.
D. All municipal rules, regulations, specifications, standards and manuals.
E. ASHTO Roadside Design Guide, latest revision.

PART 2 – PRODUCTS

2.01 PRODUCTS AND MATERIALS

A. All products and material furnished and incorporated into the work under this Section of the Specifications (including but not limited to drums, cones, signs, pavement markings, barricades, concrete barrier curb, loop vehicle detectors, changeable message sign and temporary impact attenuation system) shall conform to the requirements and specifications as may be found in the following references listed in Section 1.03and :

1. The Connecticut Department of Transportation's Typical Details for Signs,

2. The Connecticut Department of Transportation Standard Drawing Number 822-A, "Precast Concrete Barrier Curb for Temporary Traffic Control".

PART 3 – EXECUTION

3.01 GENERAL

A. The Contractor shall maintain vehicular and pedestrian traffic at all times in compliance with the requirements, restrictions, limitations and ordinances imposed by the Municipality, CT DOT (if work is on a state road) and these contract documents. If safety problems or congestion are resulting from construction activities, the Contractor may be required by the Municipality, CT DOT or the Owner to modify the work area traffic control to improve traffic flow. This shall be done immediately and at no cost to the Municipality, CT DOT or the Owner.

3.02 LIMITATIONS OF OPERATIONS

A. The Contractor shall obtain and pay for the necessary permits from the Municipality and CTDOT (if work is on a state road). Prior to any work, copies of the required permits shall be submitted to the Owner. The Contractor shall make all the necessary arrangements to coordinate traffic control procedures with the Municipality and CTDOT (if required) to minimize the impact of construction activities upon traffic flow. Work hours will be as defined in Section 00800 and/or Section 01046. The Contractor may also not be permitted to work during the following days and times:

1. As restricted by the Municipal and CTDOT (if required) permits

2. Work activities may be limited at times to accommodate traffic flow due to special events in the construction area (i.e. funerals, parades, deliveries, business activities, civic events, etc.). The Contractor may be required to clear/prepare the construction site to accommodate the special event.
3. Work activities may also be limited or suspended at times at discretion of the Owner for safety, traffic congestion, weather or other reasons.
4. Nighttime (as defined by the Municipality)
5. Weekends – except with permission from the Municipality and Owner. The contractor shall notify the Owner fourteen calendar days prior to performing work on a weekend day.
6. Saint Gabriel School closes Spring Street temporarily between Maple Avenue and Bloomfield Avenue for student recess, approximately between the hours of 11:20 a.m. and 12:10 p.m. Contractor to coordinate construction activities with Mrs. Patricia Martin, Principal of Saint Gabriel School at (860) 688-6401.

3.03 CONSTRUCTION PHASING

A. The Traffic Control plans and this specification are based on the construction sequencing as outlined in Section 01014 (Special Work Sequences and Suggested Sequence of Construction) of this document. The Contractor shall establish work areas in accordance with the Traffic Control plans or shall obtain written approval from the Owner and the Municipality and/ or the CT DOT (if on a state road) to revise.

B. The Contractor is required to prepare and submit a Traffic Control Plan to the Owner, with details as to how the traffic pattern will be installed, prior to implementing any detours or lane closures. The Traffic Control Plan shall be stamped by a Professional Engineer licensed in the State of Connecticut.

C. MPT plan revisions may result based on requests from the Contractor, the District, the Municipality or CTDOT.

1. The Contractor shall be responsible for the preparation and cost associated with their proposed revisions to the MPT including Municipal and CT DOT (if required) approval.

2. If the Owner, the Municipality, or CTDOT require a change to the MPT plans, the Owner will be responsible for the preparation and cost associated with the revision.

3. MPT patterns may also need to be altered based on field conditions and shall require approval from the Owner. Payment responsibility will be determined by the Owner.

3.04 MULTPLE WORK CONES

A. Multiple work zones may be permitted with written permission from the Owner. Multiple work zone requests will be reviewed by the Owner. Multiple work zones may not be permitted if traffic flow is compromised. Distance between work zones must be reviewed and approved by the Owner before being established in the field. Use of multiple work zones may require the Contractor to revise/edit the MPT plans at their own cost.

3.05 MOVING OR SHORT DURATION WORK ZONES

A. The Contractor shall guide traffic and protect workers and the public while conducting moving or short duration work zones. Moving or short duration work zones are anticipated for, but not limited to, road restoration (milling and paving) and installation of pavement markings. A project meeting to plan and coordinate road restoration work with Owner Outreach shall be conducted at least 14 calendar days prior to performing road restoration work. The Contractor shall request use of a police escort (shadow vehicle) when installing pavement markings. Additional traffic control measures may be required to ensure safe and efficient moving or short duration work zones.

3.06 NIGHTTIME WORK OR WORK ZONES WITH TRAFFIC CONTROL DEVICES LEFT IN PLACE OVERNIGHT OR DURING NON WORK HOURS

A. Unless specified on the contract plans, the Contractor is not permitted to leave work areas and traffic control set up in the roadway over night. The Contractor is required to protect the work area during non-work hours as well and shall protect the trench area. If steel plating is used, it shall conform to Municipal and/or CT DOT requirements. Appropriate warning/signing for steel plates shall be used. Detour signs can remain in place but shall be covered/bagged when the detour is not being actively used and removed when the detour is no longer needed.

3.07 SETTING UP OR REMOVING THE WORK ZONE TRAFFIC CONTROL

A. The Contractor shall take all necessary precautions to protect the public and workers during setup and removal of traffic control for work zones. Warning signs shall be in place in advance and prior to the

start of the work zone traffic control setup and shall remain in place until after the work zone traffic control setup has been removed. Except where traffic conditions require otherwise or as directed by the Owner, placement of the traffic control devices shall begin at the upstream end of the work zone and proceed downstream with traffic flow. Removal shall begin at the downstream end and proceed upstream, opposite of the setup flow. Work zone traffic control devices shall be set up according to the MPT plans and with proper taper and buffer (tangent) lengths. Work zone traffic pattern setup shall not commence until the start of the work hours(as defined in the contract documents) and shall be fully cleared and traffic restored to normal by the permitted end of the established work hours.

3.08 MONITORING THE WORK ZONE TRAFFIC CONTROL

A. The Contractor will be responsible for monitoring the work zone traffic control to ensure that the devices are present and in very good condition. Adjustments to the devices may need to be made from time to time at the request of the Owner or Municipality/CTDOT to meet field conditions or for other reasons (safety or congestion). The Contractor shall designate a traffic control person who is responsible for setting up and monitoring the work zone. This person shall be reachable by cell phone and should be able to respond to any requests within a reasonable timeframe (not to exceed 2 hours). Failure to adequately setup or maintain traffic control within the work zone may result in cessation of work. For each calendar day (or portion thereof) during which there are substantial deficiencies in compliance with the traffic control plans or these specifications, reduced payment will be made for the Maintenance and Protection of Traffic (lump sum part) and/or traffic items. The amount will be prorated per day.

3.09 REPORTING OF MPT ACTIVITIES

A. As part of MDC's global traffic management program, the contractor will be responsible for preparing and submitting the MDC's electronic two-week look ahead form. The form is to be e-mailed to traffic@themdc.comeach week (every Thursday by 5 PM). Information to be provided on this form includes: location of work, construction activity and MPT activity (road closed, lane closed, etc.). The MPT information will be displayed on the Owner's Google Traffic Alert map. A sample of this form has been included following this section.

3.10 ROAD CLOSURES AND DETOURS

A. The Contractor shall not close or otherwise obstruct any portion of a street, road, or walk without obtaining the necessary permits or

permission from the Municipality and CT DOT (if work is on a state road). Furthermore, the Contractor shall not obstruct any driveway or private way without first obtaining permission, in writing, from the affected property owner(s) and/or associations. The Contractor shall maintain public access to intersecting roads, residences, businesses, adjacent property, and transportation facilities. Any street, road, walk, driveway, private way or land area, public or private, that has not been officially closed shall be maintained passable and safe by the Contractor, who shall assume full liability and responsibility for the adequacy and safety of the provisions made therefore.

B. Use of private lands, walks, drives, etc. for temporary detours for vehicular or pedestrian traffic or for storage of materials, equipment, field office, etc. shall only be permitted with the written permission of the affected property owner(s) involved and the Owner. The Contractor shall take all the necessary measures and provisions to provide safe access to and from said property(ies) and shall protect the owner(s) from any liabilities and responsibilities for damages, injuries or death, as a result of the Contractor's operations. The Contractor shall furnish to the Owner copies of all agreements made with property owners prior to the use of said property(ies) by the Contractor.

C. The Contractor shall be fully responsible for notifying all affected parties of any unanticipated detour or road closings; especially emergency, fire and transportation authorities/agencies. The Contractor shall notify the Command Center of the Owner as well.

D. Road closures will not be allowed to be in effect during any non working winter months.

3.11 SIDEWALKS/WALKWAYS

A. Where pedestrian facilities exist, the Contractor shall maintain pedestrian access on at least one side of the street at all times and ensure provisions are consistent with the Americans with Disabilities Act (ADA). Where a sidewalk is closed, it shall be marked with a construction barricade and a Sidewalk Closed sign. Advance warning signs and directional guidance shall be provided to direct pedestrians. Pedestrians should be directed to cross at the nearest crosswalks or intersections.

B. The Contractor shall provide and maintain, if necessary, temporary prominently defined walkways for school-age children and other pedestrian traffic in areas of construction activity where the existing public walkways are in near proximity of excavations and/or construction equipment, thereby creating potentially hazardous

conditions. Where such walkways are required, they shall have a minimum walking width of no less than four (4) feet with metal pedestrian guiderails on the side(s) nearest or adjacent to excavations. The Contractor shall submit to the Owner for approval all such provisions for such temporary walkways.

3.12 COMMERCIAL AND RESIDENTIAL DRIVEWAY ACCESS

A. The contractor must provide access to businesses and residences at all times. The contractor must provide “Business Access” signs when the work affects any driveway opening adjacent to a business. Additional signs (Enter here, arrow boards, etc.) may also be required to guide traffic to businesses. This will be determined at the discretion of the Owner. Special consideration may be required when working around a church, funeral home, etc. Some businesses in the project area may generate truck traffic for deliveries, etc. The Contractor shall coordinate with these.

3.13 BUS SERVICE

A. The Contractor shall maintain access for school bus routes and stops. There may be door to door pick up/drop off locations within the project work area and the contractor will be required to maintain access. A contact for the public school bus transportation company will be provided to the contractor. If known and available, a listing of bus routes/stops and locations of door to door pick up/drop offs will be provided to the Contractor. Rainbow Bus Lines Inc. (860) 688-1841 provides services for Saint Gabriel School in the morning and early afternoon. The Contractor shall treat the door to door locations as a must serve and shall work with the bus transportation company to accommodate routes and stops.

3.14 MAINTAIN EXISTING TRAFFIC AND PARKING SIGNS

A. The Contractor will be responsible for maintaining existing traffic and parking signs within the project limits. Existing traffic and parking signs that conflict with construction operations shall be bagged. The Contractor shall be responsible for replacing any damaged traffic or parking signs at no additional cost to the Owner.

3.15 MAINTENANCE OF EXISTING TRAFFIC SIGNALS AND SIGNAL COORDINATION

A. The Contractor shall maintain existing traffic signals and existing signal coordination. All traffic signal hardware, including but not limited to wire, cable, conduit, pull boxes, signal heads, poles, cabinets,

pedestrian signals and pedestals, pedestrian push buttons shall be maintained. The Contractor shall work with the signal owner to coordinate operation of the signal including use of a flash operation. The Contractor is required to have available a traffic signal contractor (on an on-call as needed basis) to adjust or fix the traffic signal or signal equipment. Any signal equipment modifications or replacements should be made within 48 hours from request of the Owner or signal owner. (Urgent request may need to be made sooner). Traffic signal coordination shall be maintained through the utilization of existing interconnect, or the time-based coordination capabilities of the existing controllers, or some combination. No separate payment will be made for this work.

3.16 POLICE

A. When required by construction activities or as otherwise directed by the *Municipality* and/or the Police Chief, traffic police shall be utilized for traffic control duties, see Section 01576 of this document. The Contractor shall coordinate and arrange for all traffic police assignments. Refer to Section 01025 and 01576 for payment and description.

3.17 CONSTRUCTION VEHICLES AND EQUIPMENT

A. The Contractor shall ensure that all construction vehicles and equipment are safely stored during non-working hours so as not to constitute a hazard to vehicles and/or pedestrians. All construction vehicles and equipment shall be operated or stored with due consideration for the safety of the public and workers. Construction vehicles shall be equipped with warning lights, horns, signs and reflective markings to ensure safe operating conditions. Workers' personal vehicles shall be parked in legal parking areas within the roadway or public parking lot. Other parking locations shall be approved by the Owner and/or municipality.

3.18 CONSTRUCTION SIGNS – ENCAPSULATED LENS REFLECTIVE SHEETING

A. The Contractor shall erect and maintain all signage in accordance with the traffic control plans. The sign locations shown are approximate and may need to be adjusted in the field. Proper distances between advance warning signs are mandatory. Signs are to conform to specifications contained in The Connecticut Department of Transportation's "Standard Specifications for Roads, Bridges and Incidental Construction, Form 816", 2004, and amendments thereto and conform to the Department's typical details for signs. Signs not

conforming to these specifications or in poor condition shall not be used. The Owner may require the removal and/or replacement of signs and devices that become damaged or are not satisfactory. The Contractor shall make readily available extra signs to be used as field conditions require. Additional signs shall include at minimum: Business Open, Road Work Ahead, Steel Plates in Road, Road Closed to Thru Traffic Local Traffic Only, directional arrows and lane shift signs. The Contractor shall remove all traffic control signs and devices when no longer needed or required. Signs and their portable supports or metal posts shall conform to the requirements as shown on the plans and the latest edition of the Manual of Uniform Traffic Control Devices. Various types of portable sign supports may be used. These portable supports shall be fabricated in such a manner as to minimize the possibility of the signs being blown over or displaced by the wind from passing vehicles and are to be of a yielding type to withstand impact with minimal damage to signs, supports, and vehicles. Suitable attachments shall be provided so that the signs can be firmly attached to the portable sign supports or metal posts without causing damage to the sign. Portable sign supports shall be approved by the Owner before they are utilized on the project site.

3.19 TRAFFIC CONES

A. Traffic cones shall conform to State of Connecticut, Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 816, 2004 and amendments thereto.

B. Traffic cones shall be constructed to withstand impact without damage to cones or to vehicles. The traffic cones shall be sufficient weight or have bases to which ballast may be added to assure that they will not be blown over or displaced by wind from passing vehicles. Traffic cone spacing shall be as indicated on the MPT plans.

C. The Contractor shall have available on the project, a sufficient number of traffic cones to protect vehicular and pedestrian traffic during construction procedures. All cones deemed by the Owner, at their discretion, to be inadequate or damaged beyond practical use shall be replaced at no additional cost to the Owner.

3.20 TRAFFIC DRUMS

A. Traffic Drums shall conform to State of Connecticut, Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 816, 2004 and amendments thereto. Traffic drums shall be manufactured plastic or rubber devices approximately thirty-six (36) inches in height and a minimum of

eighteen (18) inches in diameter. The device shall allow for the installation of barricade warning lights. The device shall be stabilized with the use of sandbags, ballast rings or other approved means. If the device is other than round, the front dimension should be at least eighteen (18) inches and the side dimension should be at least twelve (12) inches.

B. The traffic drum shall have as a minimum two four (4) inch wide reflectorized orange stripes and two six (6) inches wide reflectorized white stripes. The stripes shall be placed horizontally and alternated with the orange stripe on top. Any section of the traffic drum not covered with reflective sheeting shall be orange.

C. The Contractor shall have available on the project, a sufficient number of traffic drums to protect vehicular and pedestrian traffic during construction procedures. All drums deemed by the Owner, at their discretion, to be inadequate or damaged beyond practical use shall be replaced at no additional cost to the Owner.

D. If approved by the Owner, the Contractor may substitute 42” traffic cones for drums in work areas but not in locations where the work area traffic control set up is left overnight.

E. Barricade warning lights, if required shall be portable lens-directed enclosed light. The light emitted shall be yellow and the light shall be used in a flashing mode. Barricade warning lights shall be in accordance with the requirements of the Institute of Transportation Engineers Standard for Flashing and Steady-Burn Barricade Warning Lights. Barricade warning lights will not be paid for separately.

3.21 CONSTRUCTION BARRICADE

A. Construction barricades shall conform to State of Connecticut, Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 816, 2004 and amendments thereto. Construction barricades shall consist of plastic, aluminum or other material which is of sufficient strength for the intended purpose and will not create a hazard to the public.

B. The barricade’s horizontal face panels shall have alternate stripes of white and orange encapsulated lens reflective sheeting applied as shown on the MPT Standard Details. All hardware shall be in accordance with standard commercial specifications.

3.22 PAVEMENT MARKINGS

A. Pavement markings (temporary) shall conform to State of Connecticut, Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 816, 2004 and amendments thereto or Municipal standard. Pavement markings shall painted pavement markings unless specified otherwise. Pavement markings may include centerlines, lane lines, stop lines, crosswalks, lane arrows, parking stalls, bus stop delineations, and other marking.

B. During construction, the Contractor shall maintain all pavement markings throughout the limits of the project. The Contractor shall replace all pavement markings removed or damaged by construction. The Contractor will be responsible for maintaining existing pavement markings as needed to safely and efficiently guide or control traffic. Crosswalks, stop bars and lane lines may need to be remarked or marked in a different location with painted pavement markings. The Contractor may be required to install pavement markings on an interim measure. (i.e. before a winter shutdown period, if construction is to last for more than one season.)

C. Prior to installing permanent pavement markings, the Contractor shall arrange for and attend a coordination meeting with the Municipality, CTDOT and the Owner. The Contractor shall be responsible for preparing a preconstruction pavement marking plan. The plan should detail the location and type of pavement marking (i.e. 4” white line, 12” white line, symbol and legends).

D. The Contractor shall restore pavement markings right away after:

1. Installation of temporary paving (temporary patch).
2. Installation of permanent paving.

E. The temporary pavement markings shall match the existing layout of markings, unless directed otherwise by the Owner.

F. Pavement areas to be painted shall be dry and sufficiently cleaned of sand and road debris so as to provide an acceptable bond between the paint and the pavement. All markings shall be installed in a neat and workman-like manner. The lines shall be sharp and clear with no feathered edging or fogging and precautions shall be taken to prevent tracking. The Contractor shall use a police escort for the truck mounted painting machine.

F. The Contactor shall notify the Owner, traffic@themdc.com, the Municipality and CT DOT (if work is on a state road) fourteen calendar days prior to pavement marking installation.

G. Permanent pavement markings shall be warranted for up to one year from the date of installation. Markings required to be repainted at no additional cost to the Owner will be determined at the discretion of the Owner.

3.23 VEHICLE LOOP DETECTORS

A. The Contractor shall replace traffic loop detectors, fire box wiring, and related traffic signal wiring and equipment that is removed or damaged by construction.

B. Existing traffic loops may be embedded in the pavement of side streets at signalized intersections. Exercise care not to damage the loops of the cable connecting the loops to a pull box. The Contractor shall replace loops and cables damaged by the Contractor at no additional cost to the Owner or the signal owner.. The Contractor shall notify the Owner and the signal owner at once if a loop is removed, broken or damaged.

C. In some locations, it may be necessary to remove loops and cable in order to install pipe and structures. In these locations, the loops shall be restored twice:

1. Install new temporary loops and connect to existing pull boxes immediately after temporary pavement (temporary patch) is installed.

2. Install new permanent loops and connect to existing pull boxes immediately after permanent pavement is completed.

D. In locations where loops are not disturbed by the installation of pipe or structures, but the loops are within the limits of milling and overlaying, install new permanent loops and connect to existing pull boxes immediately after permanent pavement is completed.

E. Maintain and protect temporary loops until the permanent pavement work is started..The replacement of loop detectors shall conform to the State of Connecticut Specifications for installation and materials or municipal standard. The Contractor shall coordinate with the Municipality or CT DOT (if signal is state owned) regarding the replacement of loops. The Contractor shall arrange to have a representative of the Municipality/CTDOT present during the installation of new loops.

END OF SECTION

MDC TWO WEEK LOOK AHEAD FORM

Completed By:		Project:		Contractor:	
Date Completed:		Town/City:		Work Hours:	
WEEK 1 OF 2	Monday	Tuesday	Wednesday	Thursday	Friday
STREET 1:					
From (cross street):					
To (cross street):					
Brief Description of Construction Work					
MPT Plan					
Direction of Closure					
# Police Officers					
STREET 2:					
From (cross street):					
To (cross street):					
Brief Description of Construction Work					
MPT Plan					
Direction of Closure					
# Police Officers					
STREET 3:					
From (cross street):					
To (cross street):					
Brief Description of Construction Work					
MPT Plan					
Direction of Closure					
# Police Officers					
STREET 4:					
From (cross street):					
To (cross street):					
Brief Description of Construction Work					
MPT Plan					
Direction of Closure					
# Police Officers					
Completed By:		Project:		Contractor:	

If you have any questions regarding the completion of this form, please contact traffic@themdc.com.

MDC TWO WEEK LOOK AHEAD FORM

Date Completed:		Town/City:		Work Hours:	
WEEK 2 OF 2	Monday	Tuesday	Wednesday	Thursday	Friday
STREET 1:					
From (cross street):					
To (cross street):					
Brief Description of Construction Work					
MPT Plan					
Direction of Closure					
# Police Officers					
STREET 2:					
From (cross street):					
To (cross street):					
Brief Description of Construction Work					
MPT Plan					
Direction of Closure					
# Police Officers					
STREET 3:					
From (cross street):					
To (cross street):					
Brief Description of Construction Work					
MPT Plan					
Direction of Closure					
# Police Officers					
STREET 4:					
From (cross street):					
To (cross street):					
Brief Description of Construction Work					
MPT Plan					
Direction of Closure					
# Police Officers					

If you have any questions regarding the completion of this form, please contact traffic@themdc.com.

THE METROPOLITAN DISTRICT

SECTION 01576

POLICING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. When, in the opinion of the Owner, local Police or the Engineer, public safety or convenience requires the services of police, the Engineer may direct the Contractor to provide manpower to direct traffic within the location of work under this Contract.

B. When so directed, make all arrangements in obtaining the policing manpower and all invoices for policing will be made to the Contractor and the Contractor shall pay all expenses incurred, including the salaries of the assigned personnel.

C. The intent is to insure public safety by police direction of traffic. Police are not to serve as watchmen to protect the Contractor's equipment and materials, or to warn pedestrians of such hazards as open trenches.

D. Nothing contained herein shall be construed as relieving the Contractor of any of his/her responsibilities for protection of persons and property under the terms of the Contract.

E. The Policing shall be determined and paid for by the Contractor.

F. Cancellation of any scheduled police detail due to inclement weather or any other reason shall be the responsibility of the Contractor and shall be made in accordance with the City/ Town / State Police Department requirements. Contractor shall be responsible for payment for police details not cancelled or cancelled without proper notice at no cost to the Owner.

END OF SECTION

SECTION 01600

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This Section specifies the general requirements for the delivery handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.02 TRANSPORTATION AND DELIVERY

A. Transport and handle items in accordance with manufacturer's instructions.

B. Schedule delivery to reduce long term storage prior to installation and/or operation. No materials and equipment are to be stored at the work site. The Contractor shall maintain an off-site storage yard. All materials delivered to the on site work area shall be carefully coordinated for immediate installation.

C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.

D. Deliver products in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.

E. All items delivered shall be unloaded and placed in a manner which will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.

F. Provide necessary equipment and personnel to unload all items delivered.

G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct and items are undamaged. For items furnished by others (i.e. Owner, other Contractors), perform inspection in the presence of the Engineer. Notify Engineer verbally, and in writing, of any problems.

1.03 STORAGE AND PROTECTION

A. Store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Engineer. Instruction shall be carefully followed and a written record of this kept by the Contractor. Arrange storage to permit access for inspection.

B. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

C. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking and spalling to a minimum.

D. All mechanical and electrical equipment and instruments subject to corrosive damage by the atmosphere if stored outdoors (even though covered by canvas) shall be stored in a weathertight building to prevent injury. The building may be a temporary structure on the site or elsewhere, but it must be satisfactory to the Engineer. Building shall be provided with adequate ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer.

1. All equipment shall be stored fully lubricated with oil, grease and other lubricants unless otherwise instructed by the manufacturer.

2. Moving parts shall be rotated a minimum of once weekly to ensure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, the Contractor shall start the equipment, at least half load, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.

3. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment at the time of acceptance.

4. Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guaranty the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

END OF SECTION

SECTION 01630

SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish and install products specified, under options and conditions for substitutions stated in this Section.

B. Whenever a product, material or item of equipment is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, followed by the phase "or equal," the specific item mentioned shall be the basis upon which bids are to be prepared, and shall be understood as establishing the type, function, dimension, appearance and quality desired. Other manufacturer's or vendor's products not named will be considered as substitutions, provided the required information is submitted in the manner set forth in this section and provided the substitution will not require substantial revision to the Contract Documents.

1.02 RELATED WORK

A. Section 00300 Bid Form

1.03 SUBMITTAL OF LIST OF PROPOSED SUBSTITUTIONS

A. Bidders shall submit their list of proposed substitutions and the proposed monetary changes associated therewith to the Owner on the standard form provided together with their bids.

1.04 CONTRACTOR'S OPTIONS

A. For Products specified only by reference standard, select product meeting that standard, by any manufacturer.

B. For Products specified by naming several products or manufacturers, select any one of products and manufacturers named which complies with Specifications.

C. For Products specified by naming one or more products or manufacturers and stating "or equal," submit a request as for substitutions, for any product or manufacturer which is not specifically named.

D. For Products specified by naming only one product and manufacturer, there is no option and no substitution will be allowed.

1.05 SUBSTITUTIONS

A. In order for substitutions to be considered, the Contractor shall submit, within 30 days of issuance of Notice of Award, complete data as set forth herein to permit complete analysis of all proposed substitutions noted on his substitutions list. No substitution shall be considered unless the Contractor provides the required data in accordance with the requirements of this Section within the 30 day period.

B. Submit separate request for each substitution. Support each request with:

1. Complete data substantiating compliance of proposed substitution with requirements stated in Contract Documents:

   a. Product identification, including manufacturer's name and address.

   b. Manufacturer's literature; identify:

      1.) Product description.

      2.) Reference standards.

      3.) Performance and test data.

      4.) Operation and maintenance data.

   c. Samples, as applicable.

   d. Name and address of similar projects on which product has been used, and date of each installation.

2. Itemized comparison of the proposed substitution with product specified; list significant variations. Substitution shall not change design intent and shall perform equal to that specified.

3. Data relating to impact on construction schedule occasioned by the proposed substitution.

4. Any effect of substitution on separate contracts.

5. List of changes required in other work or products.

6. Accurate cost data comparing proposed substitution with product specified.

   a. Amount of any net change to Contract Sum.

7. Designation of required license fees or royalties.

8. Designation of availability of maintenance services, sources of replacement materials.

C. Substitutions will not be considered for acceptance when:

1. They are indicated or implied on shop drawings or product data submittals without a formal request from Contractor.

2. They are requested directly by a subcontractor or supplier.

3. Acceptance will require substantial revision of Contract Documents.

D. Requests for substitutions submitted after Notice of Award will not be considered unless evidence is submitted to the Owner that all of the following circumstances exist:

1. The specified product is unavailable for reasons beyond the control of the Contractor. Such reasons shall consist of strikes, bankruptcy, discontinuance of manufacturer, or acts of God.

2. The Contractor placed, or attempted to place, orders for the specified products within 10 days after Notice of Award.

3. Request for substitution is made in writing to the Owner within 10 days of the date on which the Contractor ascertains that he cannot obtain the item specified.

4. Complete data as set forth herein to permit complete analysis of the proposed substitution is submitted with the request.

E. The Owner's decision regarding evaluation of substitutions shall be considered final and binding. Requests for time extensions and additional costs based on submission of, acceptance of, or rejection of substitutions will not be allowed. All approved substitutions will be incorporated into the Agreement by Change Order.

1.06 CONTRACTOR'S REPRESENTATION

A. In making formal request for substitution, Contractor represents that:

1. He has investigated proposed product and has determined that it is equal to or superior in all respects to that specified.

2. He will provide same warranties or bonds for substitution as for product specified.

3. He will coordinate installation of accepted substitution into the Work, and will make such changes as may be required for the Work to be complete in all

respects.

4. He waives claims for additional costs caused by substitution which may subsequently become apparent.

5. Cost data is complete and includes related costs under his Contract, but not:

   a. Costs under separate contracts.

   b. Engineer's costs for redesign or revision of Contract Documents.

1.07 OWNER DUTIES

A. Review Contractor's requests for substitutions with reasonable promptness.

B. Notify Contractor, in writing, of decision to accept or reject requested substitution.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART1 - GENERAL

1.01 SCOPE OF WORK

A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Closeout procedures.

2. Final cleaning.

3. Adjusting.

4. Spare parts and maintenance materials.

1.02 RELATED WORK

A. Section 01500, Temporary Facilities.

B. Section 01720, As-Built Documents.

C. Section 01740, Warranties and Bonds.

1.03 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, work has been inspected and that work is complete in accordance with Contract Documents and ready for Owner's inspection.

B. Provide submittals to Owner that are required by governing or other authorities.

C. Submit As-Built Documents including As-built Drawings in compliance with Section 01720, As-Built Documents.

D. Submit Application for Final Payment identifying total adjusted Contract Sum, previous payments and sum remaining due including retainage in accordance with the Agreement.

1.04 FINAL CLEANING

A. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

1. Remove labels that are not permanent labels.

2. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

3. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

1.05 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.06 SPARE PARTS AND MAINTENANCE MATERIALS

A. Supply parts and maintenance material as required or requested by the Owner.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION

SECTION 01720

AS-BUILT DOCUMENTS

A. In addition to the requirements of the General Conditions, Contractor shall maintain and provide the Engineer with as-built documents (as defined under paragraph B) including as built drawings as specified below.

B. Maintenance of Documents:

1. The Contractor shall maintain at the Site for the Owner complete sets of the following: Contract Drawings, Specifications, Addenda, approved Shop Drawings, Samples, Photographs, Change Orders, other modifications of Contract Documents, Test Records, Field Orders, and all other documents pertinent to Contractor's Work (collectively referred to herein as "As-Built Documents") in good order and marked to record all changes as they occur during construction. These shall be available to the Engineer. The drawings shall be neatly and clearly marked in color during construction to record all variations made during construction. The representation of such variations shall include such supplementary notes, symbols, legends, and details as may be necessary to clearly show the as-built construction.

2. Provide files and racks for proper storage and easy access. File in accordance with filing format of Construction Specifications Institute (CSI), unless otherwise approved by Engineer.

3. Make documents available at all times for inspection by the Engineer and Owner.

4. As-built documents shall not be used for any other purpose and shall not be removed from the Contractor's office without Owner approval.

C. Recording:

1. The Contractor shall keep as-built documents current. Drawings shall be updated within 24 hours of a field change. As-built drawings as part of the as-built documents are the final set of drawings produced at the completion of a construction project. They shall include all the changes that have been made to the original construction drawings, including notes, modifications, and any other information that the Engineer decides should be included. While the original drawings are produced using computer-aided design software by the Engineer, the as-built drawings contain handwritten notes, sketches, and changes and is developed and maintained by the Contractor. All measurements related to the construction of this Contract shall be performed by a registered Land Surveyor hired and paid by the Contractor. The measurements shall include all elevations, distances and ties described within the Contract Documents and additional requirements depicted under paragraph 1.1 and 1.2 below.

1.1. ADDITIONAL REQUIREMENTS FOR RECORDING WATER MAIN FEATURES ON THE AS-BUILT DRAWINGS.

1.1.1 Active water main pipe and water symbols for all fittings and structures including, but not limited to, crosses, tees, bends, gate valves, butterfly valves, tapping sleeves, tapping valves, anchors, thrust blocks, blow offs, reducers, corporations, sleeves, couplings, air valves, postindicator valves, boundary valves, bypass valves, check valves, PRV, meterpit, fordbox, ballvalve, cone valves, hydrants, services 4” and larger in diameter, and other water objects shall be shown. Water and fire services smaller than 4” in diameter shall not be shown. Show the water main including bends and type of restraints. Label the size and material of the water main, distances of the straight pipes and bends measured along the pipe. Active water system information should be more pronounced and easily discerned from the abandoned system.

1.1.2 Fire Hydrants and blow offs: Location of fire hydrants and blow offs, distance from main to valve, valve to fire hydrant and blow offs shall be shown.

1.1.3 Fittings and other water related objects shall be labeled as required to thoroughly describe the water system including, but not limited to, size and type, gates open right (RH) or open left (LH), bend up, bend down (include degree of bend), rolled (turn the vertical bend to change the direction in plan) mechanical joint (M.J.), horizontal gates, type of sleeve, casings, etc.

1.1.4 Abandoned water mains. The abandoned water mains shall be depicted with a dashed line and include caps and plugs and other features that were required to remain. Portions that were removed should be removed from the plans.

1.1.5 Measurements: all valves, fittings, fire hydrants, blow offs and any branches and dead ends which may require location at a future date, shall be located by measurement to fixed permanent objects. A minimum of 2 tie-downs to fixed permanent objects shall be required for all valves and hydrant operational nut. Measurements may be made to:

a. The center of other valve boxes,
b. The center of manhole covers,
c. Hydrant operating nuts,
d. Corner of storm sewer curb inlets,
e. Perpendicular to curb face.
f. Center of fittings.

Horizontal distances measured and drawn to the nearest tenth of a

foot between fittings shall be labeled along the water pipe. Horizontal distance measured and drawn between the center of storm/sanitary manholes and perpendicular to the centerline of water mains or to nearest fitting shall be labeled. Areas of restrained pipe shall be clearly labeled.

Temporary structures or objects, such as traffic signs, pavement markings, valve markers, etc. are unsatisfactory as tie down reference points.

1.1.6 Tie-in to existing system: Reference location of tie-in, provide detail sketch showing components including tees, nipple lengths, sleeves, valves, Megalugs, anchors, etc.

1.2 ADDITIONAL REQUIREMENTS FOR RECORDING SEWER / STORM PIPELINES FEATURES ON THE AS-BUILT DRAWINGS.

1.2.1 The line showing ground surface elevation and labeled “Surface as of Date” shall be marked on the as-built drawings. The presence of rock shall be shown as a projected line. The presence of sheeting left-in-place including type of material shall be shown on the as-built documents.

1.2.2 Vertical datum shall be North American Vertical Datum 1988 (NAVD88). Horizontal datum shall be the Connecticut State Plane Coordinate System, North American Datum of 1983 (NAD83). Specify the datum on each drawing.

1.2.3 The Plan and Profile Views shall show the active and left in place abandoned sanitary sewer, combined sewer (in Hartford and portions of West Hartford) and storm drainage (in Hartford and portions of West Hartford) pipes manholes, structures ,catch basins (including types) and all type of fittings built as part of the project

1.2.4 As-built drawings of sewers shall include the following obtained from an actual field survey: Cleanout station, invert in and invert out elevations at each manhole and the actual field-measured distance between centerlines of manholes, grades, manhole top elevations, type of manholes, distances from one clean out to another, and horizontal and vertical lengths for cleanouts. It shall include all siphons, force mains and chambers and all the other structures built as part of the project

1.2.5 Sanitary sewer laterals shall be shown on the Plan View from the main sewer line to the street line. The laterals shall be shown also on the Profile View where the pipe exits the main and also elevation of chimneys.

1.2.6 The Plan View labeling shall show manhole number and station to the nearest foot. Each sanitary lateral shall be labeled with the distance from the nearest downstream manhole going upstream to the lateral.

1.2.7 The Profile View shall be labeled with sanitary manhole number, sanitary manhole top of frame elevation to the nearest hundredth of a foot and location the elevation was taken i.e. north west lug (NW LUG), invert elevation to the nearest hundredth of a foot, distance between manholes (measured from the center of the manhole covers) to the nearest hundredth of a foot with size and type of pipe. These measurements shall be based on the Final Measurements.

1.2.8 A “lateral box information” (one for storm if applicable and one for sewer) shall be added to each lateral listing the following information:
Ho# = house number
Lo# = lot number
Wye = Wye fitting
T/Y = Tee-Wye fitting
T = Tee fitting
Ch = chimney
Sta. = station the lateral exits the main
End Sta. = end Station of the lateral at the property line (a perpendicular tee lateral will have the same Sta. and End Sta.)
L. = Length of pipe to the nearest tenth of a foot measured from the center of the main to the end (property line)
D. = Depth to the flow line at end of pipe to the nearest tenth of a foot
R. = rise along the entire length (L) (calculated if survey shots taken at an interval less than L)
% = slope in percentage to the nearest hundredth
Type Pipe. = type and size of pipe
Elev. End Top of Pipe = elevation of the end of the pipe to the nearest hundredth of a foot
Lat. Date = date of installation

1.2.9 Other utilities to be limited to utility crossings. The crossings depicted shall be limited to a short section of utility crossing. Label material size and type and identify the custodial utility name. No other above or below ground utilities shall be depicted on the plan.

1.2.10 Storm Drainage Construction.
Similar with sanitary sewers, the AS-BUILT drawings for storm drainage shall indicate the location of storm lines, manholes and inlets; grades; invert elevations; length of pipe runs.

1.2.11 All sanitary sewers / storm / combined AS-BUILT drawings shall indicate along each lateral, the distance from the nearest downstream manhole going upstream to the lateral. The sanitary manholes shall be numbered and have the station indicated on the manhole the way it was indicated in the field books. The station information on the manholes is required just in case that someone needs to do a cross reference with the field books or to compute the

distance between manholes if he/she doesn't have a scale in the field. The house connection box (the stamp) shall be indicated on the AS-BUILT drawings at an appropriate placement and scale **to avoid crowding the drawing**.

All chimneys shall be shown on the profile "to scale" with noted elevations

The laterals shall be referenced by the distance from the nearest downstream manhole going upstream to the lateral. A readable note shall be added to each record drawings indicating the following:

Note: The numbers indicated along the laterals represent the distance from the nearest downstream MH.

2. Do not permanently conceal any Work until required information has been recorded.

3. Contract Drawings as base for developing "as-built drawings": Legibly mark to record actual construction including elevations, dimensions, length and ties to permanent structures.

4. Specifications and Addenda: Legibly mark up each Section.

5. Shop Drawings: Maintain as as-built documents and legibly annotate drawings to record changes made after review.

D. Submittals:

At completion of the Contract, the Contractors shall deliver to the Engineer the following documents:

1. Two sets (hard copies) of the As-Built drawings completed with all details specified above (see paragraph C1, C1.1, C1.2). The As-Built drawings shall be certified by the following technical staff:
   - Registered Licensed Surveyor, licensed in the State of Connecticut, hired and paid by Contractor.
   - Construction Site Inspectors
   - Contractor's Project Manager
   - Representative of the District's Construction Project Manager
   - Representative of the District's Project Manager

   The above certification shall be affixed on each drawing. If the space on the existing drawing is limited, then the certification can be applied on the back of each drawing.

2. All originals of the other documents to included but not limited to: Contract Drawings, Specifications, Addenda, approved Shop Drawings, Samples, Photographs, Change Orders, other modifications of Contract

Documents, Test Records, Field Orders, and all other documents pertinent to Contractor's Work

E. PAYMENTS.

The work specified under this Section shall be paid according to the bid price including in the schedule of prices for "AS BUILT DOCUMENTS". The bid price for this work shall be paid to the Contractor only after the Contractor has delivered the documentation referenced under paragraph D above

The bid price for the work specified under this Section shall include at least the following expenses:

- Expenses by the Contractor for the services of a registered Land Surveyor.
- Expenses by the Contractor for the services of various technicians to record the revisions under the Contract Documents.
- Any additional expenses to comply with the referenced specifications.

The bid price for "As Built Documents" shall not be less than the following amount:

Bid Price for As Built Documents = (Length of the pipelines in ft)/50 x $400/day

END OF SECTION

SECTION 01725

PRESERVATION AND RESTORATION OF PROJECT FEATURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Protection and replacement of trees, shrubs, signs, property markers, fences, and related project features.

2. Taking precautions, providing programs, and taking actions necessary to protect public and private property and facilities that are outside the Work scope from damage.

1.02 DEFINITIONS

A. Underground Structures

1. Underground structures are defined to include, but not be limited to, sewer, water, gas, and other piping; manholes; chambers; electrical and signal conduits; tunnels; and other existing subsurface work located within or adjacent to the limits of the Work.

2. Underground structures known to the Engineer are shown on the Drawings to the extent that locations are available. This information is shown for the assistance of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete. The Contractor shall be responsible for checking on the actual locations of water, sewer, gas, electric and telephone service connection lines to avoid potential interferences.

B. Surface Structures

1. Surface structures are defined as existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extensions below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks and all other facilities that are visible above the ground surface.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION

3.01 REPAIR / RESTORATION

A. Trees and shrubs on private property, which are removed or damaged by the Contractor shall be replaced in kind.

B. Signs, fences, property markers, walls, guard rails and other public or private property shall be replaced in kind if damaged by the Contractor. Supports and protective devices required shall be provided.

C. Underground and Surface Structures

1. In the event of damage, injury or loss to existing utilities and structures that were not indicated to be removed or abandoned, whether shown on the Drawings or not, make all reasonable efforts to facilitate repairs and to mitigate the impact of such events upon the utility or structure owner's normal operations. Restore the existing utility or structure to the condition required by the owner of the utility or structure or at least to the condition found prior to the Work. In the event that the utility owner elects to make the repairs, provide all reasonable access and assistance, and reimburse the utility owner for the cost of repairs. If utility service is interrupted due to damage to facilities, alternate facilities shall be provided.

2. All other existing surface facilities, including, but not limited to, guard rails, posts, guard cables, signs, poles, markers and curbs which are temporarily removed to facilitate the Work shall be replaced and restored to their original condition at the Contractor's expense unless otherwise indicated in other sections of these Specifications.

3. Wherever water, sewer, gas or petroleum mains; electric or telephone lines; cables; or other utilities and structures are encountered and may be in any way interfered with, inform the Engineer and the appropriate utility company. Cooperate with the Engineer and utility company in the protection, removal, relocation, and replacement of structures and facilities.

4. Prior to proceeding with any demolition or construction, notify in writing owners of utilities and structures within the vicinity of the proposed Work.

5 Work affecting water distribution systems, which will take fire hydrants out of must be coordinated with the local fire department. The Contractor shall be prepared to restore fire flows in the event of an emergency or to provide for temporary fire flow service in accordance with the requirements of the local fire department.

6. Materials used for relocation or replacement of utilities and structures shall be of an equivalent material, type, class, grade and construction as the existing or as approved by the respective owners thereof, unless otherwise shown or specified.

7. When any survey monument or property marker, whether of stone, concrete, wood or metal, is in the line of any trench or other demolition or construction work and may have to be removed, notify the Engineer in advance of removal. Under no circumstances shall any monument or marker be removed or disturbed by the Contractor or by any of his Subcontractors, employees or agents, without the permission of the Engineer. Monuments or markers removed or disturbed shall be reset by a land surveyor licensed in the State where the Work is located at the Contractor's expense. Should any monuments or markers be destroyed through accident, neglect or as a result of the Work under this Contract, the Contractor shall, at his own expense, employ a land surveyor licensed in the State where the Work is located to re-establish the monument or marker.

D. Replace in-kind any damaged traffic loop detection wiring in a timely fashion. In general, traffic signal wiring damaged by the Contractor shall be replaced and placed in service no later than 24-hours after being taken out of service.

3.02 PROTECTION

A. The construction of certain portions of the project may require excavation within the root systems of trees. If necessary, excavation shall be made with small powered equipment or by hand to comply with this requirement. It may be necessary to excavate from more than one direction to avoid damage to the roots. No roots shall be cut within the "Critical Root Radius (CRR)" .The Critical Root Radius (radius, not diameter, in feet) is calculated by measuring the diameter (not radius or circumference) of the trunk (in inches, not feet) at four and one-half feet from the ground and multiplying by 1.5. A tree with a five-inch diameter trunk (at the four and one-half foot level) will have a CRR of 7.5 feet. The CRR provides a general guideline. This concept is based on the manner in which roots grow and their function. Within the CRR, the roots serve as pipes carrying the water and minerals harvested by smaller roots further from the trunk. Cutting the large root removes all branch roots and the absorbing roots associated with them. The larger roots have lost the ability to regenerate new roots, so lost ability to absorb water and minerals is permanent. Smaller roots (outside the CRR) can more readily regenerate new roots to replace those that were cut. The Contractor shall consider the tree's loss of stability in wind and under snow and ice loads. The roots provide a wide base for the tree, helping to keep it upright. Removing a portion of this base reduces the stability of the tree and may allow it to fall on structures or people. If the absorbing roots are cut, it may cause dieback in the top of the tree. Dead branches can then become

hazardous. They shall be pruned from the tree before they fall and cause injury.

B. The trunks of trees that are to remain and are within the swing radius of the excavating machine bucket when fully extended shall be wrapped with burlap and by 4 inch protective wood slats (8 inch spacing maximum) wired around the circumference of the trees to protect them from damage.

C. Tree limbs shall not be cut except upon written approval of the Owner and the Engineer. Tree limbs cut shall be painted with approved paint manufactured specifically for that purpose.

D. Underground and Surface Structures

1. Sustain in their places and protect from direct or indirect injury underground and surface structures designated to remain within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the owning or controlling such structure. Before proceeding with the work of sustaining and supporting such structure, satisfy the Engineer that the methods and procedures to be used have been approved by the party owning same.

2. Pay utility service company charges related to the temporary support of utility poles if required to complete the Work.

3. Assume risks associated with the presence of underground and surface structures within or adjacent to the limits of the Work. The Contractor shall be responsible for damage and expense for direct or indirect injury caused by his Work to any structure. Immediately repair damage caused by the Work to the satisfaction of the owner of the damaged structure.

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.

1.02 RELATED WORK

A. Refer to Conditions of Contract for the general requirements relating to warranties and bonds.

B. General closeout requirements are included in Section 01700 Contract Closeout.

C. Specific requirements for warranties for the Work and products and installation that are specified to be warranted are included in the individual Sections of Divisions 2 and 3.

1.03 SUBMITTALS

A. Submit written warranties to the Owner prior to the date fixed by the Engineer for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion of the Work, or a designated portion of the Work, submit written warranties upon request of the Owner.

B. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within 15 days of completion of that designated portion of the Work.

C. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner for approval prior to final execution.

D. Refer to individual sections of Divisions 2 and 3 for specific content requirements, and particular requirements for submittal of special warranties.

1.04 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.

B. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the Owner has benefited from use of the work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights or remedies.

E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

F. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the products, nor does it relieve suppliers, manufacturers and subcontractors required to countersign special warranties with the Contractor.

1.05 DEFINITIONS

A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION

MDC

Environment, Health & Safety Department

Memorandum

To: Operations - Mario Calderon, Todd Cormier, Kathleen Drake, Tom Fresta, Dave Hartley, Robert Langenauer, Dave McMahon, Jeff Passardi, Greg Rushby, Ed Sargent, Harvey Wall, Barry Zajack
PMU – Dane Kendall, Roopa Krishnamurthy, Michael Mancini, Jason Waterbury
Engineering & Planning – Jennifer Ottalagana, Lebert Thomas

From: Craig Scott

Date: August 4, 2010

C: Sally Keating Nyren

Subject: Sanitary Sewer Bypass Phone Notification Requirements

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Attached is the revised Bypass reporting form based on the following changes:

- "CAUSE OF BY-PASS" – JET TRUCK HOSE CLEANING was added as an option.

- "METHOD USED TO CLEAN AREA:" – additional space was provided to allow additional text to be typed above drop down text, if needed.

Additionally, please note the following bypass reporting procedure changes:

- The EPA, DEP, and town health departments have agreed to the MDC's proposed modification not requiring 2-hour verbal or 24-hour written notification for "minor overflows from plumbing fixtures" or "toilet burps" of five (5) gallons or less. On the second page of the SSO Bypass Report Form, please enter "N/A" for the notification times. However, all other information needs to be recorded on the form.

- EH&S will not require telephone notification for "minor overflows from plumbing fixtures" or "toilet burps" of five (5) gallons or less.

- Continue to prepare a written SSO Bypass Report Form for all bypass events (including five gallons or less). The Bypass Reports are used to complete the quarterly SSO summary table for submittal to the EPA, DEP, and town health departments. Individual Bypass Reports for less than 5 gallons overflows will also be available if requested by the EPA, DEP or town health departments.

In addition, a standard script for the initial phone notifications has been developed to provide consistency among departments for telephone notifications to the regulatory agencies. Most notifications will fit this script but may be modified if more information is necessary. The script is as follows:

"This is (NAME) from the MDC (DEPARTMENT) in Hartford, CT. We are reporting a sanitary sewer bypass for (STREET ADDRESS), (TOWN). The bypass event occurred on (DATE) and was confirmed at (TIME MDC confirmed).

- This is: ("an ongoing event") or ("was resolved at (TIME)").
- The bypass was caused by (REASON).
- The bypass is approximately: (XX Gallons) or ("is unknown at this time").
- A written report will follow this notification, as required. If there are any questions, regarding this notification please contact (NAME) at (860) 278-7850 extension (DEPARTMENT or PERSONAL EXTENSION)."

For the phone notification, if some of the required information is "unknown" then that should be stated.

MDC EMERGENCY / PLANNED BY-PASS PUMPING REPORTING FORM

WORK ORDER #:

FINAL REPORT RE:

Town: _____

Date By-Pass was Initiated: _____

Date By-Pass was Stopped: _____

Reason for By-Pass: _____

Time By-Pass was Initiated (HH:MM): _____

Time By-Pass was Stopped (HH:MM): _____

Duration of By-Pass: _____

Type of By-Pass: _____

Exact Location of By-Pass Pumping: _____

How issue was discovered (e.g. CCTV): _____

Quantity / Volume of By-Pass Pumped: _____

Was any sewage spilled? _____ **If yes, complete SSO By-Pass Reporting Form** _

If Equipment Failed, Date of Last Inspection, Maintenance or Repair: _____

Steps taken to minimize volume and duration of By-Pass pumping: _____

Reason for By-Pass Pumping: _____

Steps taken to prevent recurrence of By-Pass pumping: _____

Date of last by-pass at this location: _____

TIME _____

MDC EMERGENCY / PLANNED BY-PASS PUMPING REPORTING FORM

_____ **CTDEP - Iliana Ayala (860) 424-3758 (Primary DEP Contact)***

***If Iliana Ayala is not available, call Municipal Facilities Sections at: (860) 424-3704**

_____ **CTDEP - Iliana Ayala (860) 424-3758 (Primary DEP Contact)***

IF PLANNED BY-PASS PUMPING IS PERFORMED AFTER HOURS LEAVE MESSAGE

Note if left message _____

Time (HH:MM)	Date (MM-DD-YYYY)	BY-PASS PUMPING REPORT LOG
_____	_____	**E-mail to DEP Iliana Ayala or:**
_____	_____	**Fax to DEP Iliana Ayala (860) 424-4067 (fax)**
_____	_____	**E-mail to EH&S - Craig Scott**

Submit by E-mail to CT DEP

Report Submitted by: _____ **Title:** _____

Signature: _____ **Date:** _____

FINAL Report by: _____ **Title:** _____

Signature: _____ **Date:** _____

Submit Completed Report to:

State of Connecticut
Department of Environmental Protection
Bureau of Water Management - Attention Iliana Ayala
79 Elm Street
Hartford, CT 06106-5127

TOWN HEALTH DIRECTORS

~~WEST HARTFORD & BLOOMFIELD HEALTH DISTRICT:~~

~~Steve Hulcatt, Director of Health~~
~~WHBHD~~
~~693-C Bloomfield Avenue~~
~~Bloomfield, CT 06002~~

~~Tel: (860) 561-7900~~
~~Fax: (860) 561-7918~~

~~e-mail: **Steveh@westhartford.org**~~

~~NEWINGTON, ROCKY HILL & WETHERSFIELD HEALTH DISTRICT:~~

~~Paul Hutcheon, Director of Health~~
~~Wethersfield Town Hall~~
~~505 Silas Deane Highway~~
~~Wethersfield, CT 06109~~

~~Tel: (860) 721-2822~~
~~Fax: (860) 721-2823~~

~~e-mail: **paul.hutcheon@wethersfieldct.com**~~

~~HARTFORD HEALTH DEPARTMENT~~

~~Carlos Rivera, Director of Health~~
~~Hartford Health Department~~
~~131 Coventry Street~~
~~Hartford, CT 06112~~

~~Tel: (860) 543-8800~~
~~(860) 547-1426 x7505~~
~~Fax: (860) 722-6719~~

~~e-mail: **rivc003@hartford.gov**~~

~~EAST HARTFORD HEALTH DEPARTMENT~~

~~James Cordier, Director of Health~~
~~East Hartford Town Hall~~
~~740 Main Street~~
~~East Hartford, CT 06108~~

~~Tel: (860) 291-7324~~
~~Fax: (860) 291-7326~~

~~e-mail: **jcordier@ci.east-hartford.ct.us**~~

WINDSOR HEALTH DEPARTMENT

Charles Petrillo, Director of Health
Windsor Town Hall
275 Broad Street
Windsor, CT 06095

Tel: (860) 285-1823
Fax: (860) 285-1809

e-mail: **health@townofwindsorct.com**

CT DEP after hours dispatch: (860) 424-3338 (860) 424-3333 or (860) 424-3704

DO NOT LEAVE MESSAGE

DIVISION 2
SITEWORK

THE METROPOLITAN DISTRICT

MAPLE AVENUE SANITARY SEWER REPLACEMENT & REHABILITATION

CONTRACT NUMBER 2013-04

TABLE OF CONTENTS

DIVISION 2 – SITEWORK

02011 TEST PITS
02050 DEMOLITION AND MODIFICATIONS
02053 REMOVAL AND DISPOSAL OF EXISTING SEWER, MANHOLES AND APPURTENANCES
02100 SITE PREPARATION
02110 CONTAMINATED SOIL EXCAVATION
02140 DEWATERING AND DRAINAGE
02145 HANDLING CONTAMINATED GROUNDWATER
02150 BYPASS PUMPING, HANDLING STORM RUNOFF AND SANITARY SEWAGE FLOWS
02160 EXCAVATION SUPPORT SYSTEMS
02200 EARTHWORK
02201 EARTH EXCAVATION BELOW GRADE AND OUTSIDE LIMITS OF THE TRENCH
02202 SPECIAL TRENCH REFILL
02230 GRANULAR MATERIALS
02260 HANDLING, TRANSPORTATION AND DISPOSAL OF REGULATED SOIL
02270 SEDIMENTATION AND EROSION CONTROL
02276 SILT FENCE
02317 UNDERGROUND WARNING TAPE
02510 TEMPORARY AND PERMANENT PAVED SURFACE RESTORATION
02515 CONCRETE WALKWAYS
02531 CLEANING AND TELEVISION INSPECTION OF SEWER LINES
02550 WORK IN STATE HIGHWAYS AND RIGHT-OF-WAYS
02568 PRESSURE TESTING AND JOINT SEALING OF SANITARY SEWER BUILDING LATERAL
02575 PAVEMENT MARKINGS
02605 MANHOLES
02610 SEWER TESTING AND CLEANING
02612 REINFORCED CONCRETE PIPE
02622 POLYVINYL CHLORIDE SEWER PIPE
02628 PIPE REPAIR COUPLINGS
02640 POINT REPAIRS TO SANITARY SEWER LINES
02654 REMOVAL OF PROTRUDING TAPS

02720	CATCH BASINS
02721	LAYING SEWER AND DRAIN PIPE, GENERAL
02764	TELEVISION INSPECTION
02766	CURED-IN-PLACE PIPE (CIPP) FOR SEWER MAINS
02767	MANHOLE REHABILITATION
02901	MISCELLANEOUS WORK AND CLEAN UP
02905	UNPAVED SURFACE RESTORATION AND RESET MISCELLANEOUS ITEMS
02930	LOAMING, SEEDING AND SODDING
02971	CLEANUP

SECTION 02011

TEST PITS

PART 1 GENERAL

1.01 DESCRIPTION

A. The work under this Section includes the excavation of exploratory test pits to determine or verify underground utility or structure locations or other purposes.

1. Test pit excavation under this Section shall be made where indicated on the Drawings or as ordered by the Engineer. Required pre-excavation of the trench as specified elsewhere herein shall not be considered as a test pit for the purposes of this Contract. The work shall include all necessary excavating, disposing of unused excavated material, refilling trenches, furnishing additional material for refilling, temporary paving, permanent surface restoration in non-paved areas, bracing, pumping and all incidental work except as otherwise provided for. Any test pit performed by Contractor at locations not shown, or not as directed by the Engineer shall be at no additional cost to Owner.

B. This item of work is not intended for the general use of the Contractor to verify the location of underground utilities, structures or service connections for the work shown on the Contract Drawings. The cost of any such work shall be included in the appropriate item for permanent works.

1.02 RELATED WORK

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES.

B. SECTION 01320, CONSTRUCTION PHOTOGRAPHS

C. SECTION 02140, DEWATERING AND DRAINAGE.

D. SECTION 02160, EXCAVATION SUPPORT SYSTEM

E. SECTION 02200, EARTHWORK

F. SECTION 02510, TEMPORARY AND PERMANENT PAVED SURFACES

G. SECTION 02905, UNPAVED SURFACE RESTORATION AND RESET MISCELLANEOUS ITEMS

PART 2 PRODUCT

2.01 BANK RUN GRAVEL AND OTHER SPECIAL TRENCH REFILL MATERIALS

A. Refer to Section 02202.

2.02 TEMPORARY PAVEMENT

A. Refer to Section 02510

PART 3 EXECUTION

3.01 GENERAL.

A. Test pit excavations shall be made at locations shown on the Contract Drawings and as ordered by the Engineer and as specified below. The horizontal dimensions of the pit shall be as ordered by the Engineer. Excavation beyond the ordered limits will not be paid for. In areas where reinforced concrete sub-base exists, the limit of payment for cutting, removal and installation of the reinforced concrete base shall be 50 square feet.

B. The existing pavement and/or sidewalks to be removed and existing pavement and/or sidewalks to remain shall be carefully saw cut to leave a smooth, straight and vertical edge.

C. Material shall be carefully excavated so that the underground utility or structure being searched for, or any other utility or structure, will not be damaged or destroyed. Excavation shall be with a hand shovel if conditions so warrant. Any utility or structure damaged or destroyed shall be replaced or repaired at no additional cost to the Owner.

D. Support of the excavation and dewatering shall be sufficient to accomplish the purpose of the test pit and be in conformance, where required, with other applicable sections of these Specifications.

E. The Contractor shall be responsible for having an on-site mark-out of all utilities (i.e. Call Before You Dig 1-800-922-4455 or 811) in the area completed prior to digging a test pit in that area.

F. Backfill where the material will be subsequently re-excavated as part of the work under this Contract:

1. The test pit shall be backfilled with bank run gravel material in accord with the requirements of Section 02202.

2. Temporary and permanent paved and unpaved surface restoration and resetting miscellaneous items shall be made in accord with the requirements of Sections 02510 and 02905.

3. Restoration of reinforced concrete sub-base in these areas will not be measured for payment.

G. Backfill in areas that will not be subsequently re-excavated as part of the work under this Contract:

1. The test pit shall be backfilled with bank run gravel material as directed by the Engineer in accordance with Section 02202.

2. The pavement surface shall receive a temporary patch in accordance with Section 02510.

3. The pavement surface shall be permanently restored in accordance with Section 02510.

4. Where unpaved areas are disturbed in the course of test pit excavation, restoration shall be in accordance with Section 02905.

5. Restoration of reinforced concrete sub-base in these areas will be measured for payment as a maximum of 50 square feet.

H. The Contractor shall submit field sketches and digital photographs (close up and some distance away to show relative location) of each Test Pit completed. Field Sketches shall contain elevations of pipe and duct bank inverts and/or crowns, elevations (top and bottom), sizes, locations (horizontal and vertical) from a known point (curb, etc.) and materials of all observed utilities or other obstructions within the trench limit. Test Pits shall be numbered and kept on file with as-built drawings.

3.02 SERVICE CONNECTION OR UTILITY VERIFICATION

A. Tests may be carried out to verify the location and type of service connections or utilities or for other purposes as determined by the Engineer.

B. Test pits at gas main crossings shall be utilized to determine if the crossing can be made at the location indicated on the plans. If the crossing is to take place at a pipe joint in the gas main, the location of the crossing shall be revised so that it will not occur at a joint. In Connecticut, all excavations, except the removal of bituminous or concrete road surfaces, within 18” on either side of a hazardous fuel line (natural gas, propane or gasoline) must be done with hand tools only.

END OF SECTION

SECTION 02050

DEMOLITION AND MODIFICATIONS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and demolish, modify, remove and dispose of work shown on the Drawings and as specified herein.

B. Included, but not limited to, are demolition, modifications and removal of existing materials, equipment or work necessary to install the new work as shown on the Drawings and as specified herein and to connect with existing work in approved manner.

C. Demolition, modifications and removals which may be specified under other Sections shall conform to requirements of this Section.

D. Demolition and modifications shall include the specified work defined under Section 01010 Summary of Work, and Section 01100 Special Provisions.

E. Blasting and the use of explosives will not be permitted for any demolition work.

1.02 RELATED WORK

A. Section 01010, Summary of Work

B. Section 01110, Environmental Protection Procedures.

C. Section 01120b, Site Specific Health and Safety Plan.

D. Section 01300, Submittals

E. Section 02100, Site Preparation

F. Section 02200, Earthwork.

1.03 SUBMITTALS

A. Submit to the Engineer, in accordance with Section 01300, six copies of proposed methods and operations of demolition of the structures and modifications prior to the start of work. Include in the schedule the coordination of shutoff, capping and continuation of utility service as required.

B. Furnish a detailed sequence of demolition and removal work to ensure the uninterrupted progress of the Owner's operations. Sequence shall be compatible with sequence of construction and shutdown coordination requirements as specified in Section 01014 (Special Work Sequences and Suggested Sequence of Construction).

C. Before commencing demolition work, all modifications necessary to bypass the affected structure shall be completed. Actual work shall not begin until the Engineer has inspected and approved the modifications and authorized commencement of the demolition work in writing.

1.04 JOB CONDITIONS

A. Protection

1. Execute the demolition and removal work to prevent damage or injury to structures, occupants thereof and adjacent features which might result from falling debris or other causes, and so as not to interfere with the use, and free and safe passage to and from adjacent structures.

2. Closing or obstructing of roadways, sidewalks and passageways adjacent to the work by the placement or storage of materials will not be permitted and all operations shall be conducted with a minimum interference to traffic on these ways.

3. Erect and maintain barriers, lights, sidewalk sheds and other required protective devices.

B. Scheduling

1. Carry out operations so as to avoid interference with operations and work in the existing facilities.

C. Notification

1. At least 48 hours prior to commencement of a demolition or removal, notify the Engineer in writing of proposed schedule therefor. Owner shall inspect the existing equipment and to identify and mark those items which are to remain the property of the Owner. No removals shall be started without the permission of the Engineer.

D. Conditions of Structures

1. The Owner and the Engineer assume no responsibility for the actual condition of the structures to be demolished or modified.

2. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable. However, variations within a structure may occur prior to the start of demolition work.

E. Repairs to Damage

1. Promptly repair damage caused to adjacent facilities by demolition operation when directed by Engineer and at no cost to the Owner. Repairs shall be made to a condition at least equal to that which existed prior to construction.

F. Traffic Access

1. Conduct demolition and modification operations and the removal of equipment and debris to ensure minimum interference with roads, streets, walks both onsite and offsite and to ensure minimum interference with occupied or used facilities.

2. Do not close or obstruct streets, walks or other occupied or used facilities without permission from the Engineer. Furnish alternate routes around closed or obstructed traffic in access ways.

1.05 RULES AND REGULATIONS

A. The Building Code of the State of Connecticut shall control the demolition, modification or alteration of the existing buildings or structures.

B. No building or structure, or any part thereof, shall be demolished until an application has been filed with the Building Inspector and a permit issued. The fee for this permit shall be the Contractor's responsibility.

1.06 DISPOSAL OF MATERIAL

A. Salvageable material and equipment noted on the drawings and / or listed under Section 01100 (Special Provisions) shall become the property of the Owner. Dismantle all such items to a size that can be readily handled and deliver them to a designated storage area as directed by the Owner. Any such material damaged due to improper handling will not be accepted and the replacement value of the material deducted from the payment to the Contractor.

B. All other material and items of equipment shall become the Contractor's property and must be removed from the site.

C. The storage or sale of removed items on the site will not be allowed.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 GENERAL

A. All materials and equipment removed from existing work, shall become the property of the Contractor, except for those which the Owner has identified and marked for his/her use. All materials and equipment marked by the Owner to remain shall be carefully removed, so as not to be damaged, cleaned and stored on or adjacent to the site in a protected place specified by the Engineer or loaded onto trucks provided by the Owner.

B. Dispose of all demolition materials, equipment, debris and all other items not marked by the Owner to remain, off the site and in conformance with all existing applicable laws and regulations. Demolition debris must be reused or disposed of at a Department of Energy and Environmental Protection approved Construction and Demolition Volume Reduction Plant. The Engineer must approve any plans to reuse the material at another location. Weight tickets must be provided for any materials disposed of at a Construction and Demolition Volume Reduction Plant.

C. Pollution Controls

1. Use water sprinkling, temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.

a. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding and pollution.

b. Clean adjacent structures, facilities, and general work area of dust, dirt and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the work.

D. Building Demolition - NOT USED

3.02 STRUCTURAL REMOVALS - NOT USED

3.03 ELECTRICAL REMOVALS - NOT USED

3.04 CLEAN-UP

A. Remove from the site all debris resulting from the demolition operations as it accumulates. Upon completion of the work, all materials, equipment, waste and

debris of every sort shall be removed and premises shall be left, clean, neat and orderly.

END OF SECTION

SECTION 02053

REMOVAL AND DISPOSAL OF EXISTING SEWER, MANHOLES AND APPURTENANCES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Work performed under this section shall include the removal and proper disposal of all existing sanitary, storm and combined sewers, removal and proper disposal of all existing sanitary sewer piping, storm drain piping, laterals and manholes necessary for installation of the proposed sewers as shown on the plans and indicated in the Specifications. The Contractor shall furnish all the necessary labor, equipment, tools, materials and services required to perform such work, including payment for and requisition of all necessary permits, excavation costs, trench support, dewatering, support of adjacent utilities, etc., and the removal, storage, transporting and proper disposal of all materials, regulated and non-regulated.

1.02 RELATED WORK.

A. SECTION 01510, MAINTENANCE OF FLOW IN EXISTING SEWERS

B. SECTION 02140, DEWATERING AND DRAINAGE

C. SECTION 02160, EXCAVATION SUPPORT SYSTEMS

D. SECTION 02200, EARTHWORK

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION

A. The Contractor shall take all measures to support adjacent utilities, above and below ground during the removal of the existing sewers, manholes and laterals.

B. The Contractor shall comply with all federal, state, regional and local statutes, codes, ordinances and regulations regarding the proper removal and disposal of the existing sewers, manholes and laterals.

C. All flows of sewage regardless of quantity or source must be maintained during the prosecution of the work. The Contractor’s attention is directed to Section 02150, Subsection 3.04, “Bypass Pumping Handling Storm Runoff and Sanitary Sewage Flows,” regarding the maintenance of all such flows.

D. In transporting both regulated and non-regulated materials from the construction site to approved disposal sites, the Contractor shall take all the necessary precautions to prevent spillage of solid and liquid regulated and non-regulated materials from the transporting vehicles.

E. The Contractor shall obtain all the necessary and required permits and licenses, provide all personnel and equipment including loading equipment, trucks, equipment operators and drivers, documentation and manifest forms and coordination with the presiding governing authorities having jurisdiction for the proper disposal of regulated materials at an approved site, and comply with all applicable federal, state, regional, municipal and DOT specific regulations and all disposal regulations.

The Contractor shall at no additional charge to the Owner, deliver and unload all salvageable manhole frames and covers from the existing sewer systems to the MDC Maxim Road Yard, 125 Maxim Road, Hartford.

END OF SECTION

SECTION 02100

SITE PREPARATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials and equipment required and perform all site preparation, complete as shown on the Drawings and as specified herein.

B. Obtain all permits required for site preparation work prior to proceeding with the work, including clearing and tree removal.

C. The areas to be cleared, grubbed and stripped within public rights-of-way and utility easements shall be minimized to the extent possible for the scope of work and in consideration of the actual means and methods of construction used. No unnecessary site preparation within these areas shall be performed. No tree shall be removed unless specified, shown on the Drawings or with prior permission of the Owner.

D. Contractor shall contact the appropriate regulatory authority and the Owner to review and approve any trees to be cut prior to starting any cutting.

1.02 RELATED WORK

A. Section 01110, Environmental Protection Procedures.

B. Section 02050, Demolition and Modifications.

C. Section 02200, Earthwork.

D. Section 02930, Loaming and Seeding.

1.03 SUBMITTALS

A. Submit to the Engineer, in accordance with Section 01300, copies of all permits required prior to clearing, grubbing, and stripping work.

B. The proposed site for the disposal of material and debris from the site preparation shall be submitted for approval to the District's Environment Health and Safety Department.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 CLEARING

A. Cut and remove all timber, trees, stumps, brush, shrubs, roots, grass, weeds, rubbish and any other objectionable material resting on or protruding through the surface of the ground.

B. Preserve and protect trees and other vegetation designated on the Drawings or directed by the Engineer to remain as specified below.

3.02 GRUBBING

A. Grub and remove all stumps, roots in excess of 1-1/2-in in diameter, matted roots, brush, timber, logs, concrete rubble and other debris encountered to a depth of 18-in below original grade or 18-in beneath the bottom of foundations, whichever is deeper.

B. Refill all grubbing holes and depressions excavated below the original ground surface with suitable materials and compact to a density conforming to the surrounding ground surface in accordance with Section 02200.

3.03 STRIPPING

A. Strip topsoil from all areas to be occupied by buildings, structures, and roadways and all areas to be excavated or filled.

B. Topsoil shall be free from brush, trash, large stones and other extraneous material. Avoid mixing topsoil with subsoil.

C. Stockpile and protect topsoil until it is used in landscaping, loaming and seeding operations. Dispose of surplus topsoil after all work is completed.

3.04 DISPOSAL

A. Cut tree trunks and limbs exceeding 4-in in diameter shall be cut into 4-ft lengths and stockpiled on site in the area designated on the Drawings.

B. Dispose of material and debris from site preparation operations by hauling such materials and debris to an approved offsite disposal area. No rubbish or debris of any kind shall be buried on the site.

C. Burning of cleared and grubbed materials or other fires for any reason will not be permitted.

3.05 PROTECTION

A. Trees and other vegetation designated on the Drawings or directed by the Engineer to remain shall be protected from damage by all construction operations by erecting suitable barriers, guards and enclosures, or by other approved means. Conduct clearing operations in a manner to prevent falling trees from damaging trees and vegetation designated to remain and to the work being constructed and so as to provide for the safety of employees and others.

B. Maintain protection until all work in the vicinity of the work being protected has been completed.

C. Do not operate heavy equipment or stockpile materials within the branch spread of existing trees.

D. Immediately repair any damage to existing tree crowns, trunks, or root systems. Roots exposed and/or damaged during the work shall immediately be cut off cleanly inside the exposed or damaged area. Treat cut surfaces with an acceptable tree wound paint and topsoil spread over the exposed root area.

E. When work is completed, remove all dead and downed trees. Live trees shall be trimmed of all dead and diseased limbs and branches. All cuts shall be cleanly made at their juncture with the trunk or preceding branch without injury to the trunk or remaining branches. Cuts over 1-inch in diameter shall be treated with an acceptable tree wound paint.

F. Restrict construction activities to those areas within the limits of construction designated on the Drawings, within public rights-of-way, and within easements provided by the Owner. Adjacent properties and improvements thereon, public or private, which become damaged by construction operations, shall be promptly restored to their original condition, to the full satisfaction of the property owner.

G. Construct as necessary based on the type of equipment to be used during the pipelines installations, an access road within the right of way to facilitate the construction activity.

END OF SECTION

SECTION 02110

CONTAMINATED SOIL EXCAVATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Excavation, handling, stockpiling, and temporary storage of Contaminated/Polluted Soil.

2. Movement and placement of Contaminated/Polluted Soil into a temporary controlled stockpile area.

3. Decontamination of tools, equipment, and vehicles and the collection, management and disposal of resulting liquids and/or solids.

4. Other work involving the handling of contaminated materials which may be required including but not limited to miscellaneous facility component removal, removal of obstructions, excavation support systems, and any incidental work related thereto.

B. Related Sections

1. Section 00470, Contractor Safety

2. Section 01110, Environmental Protection Procedures

3. Section 02120, Transportation and Disposal of Contaminated Soil

4. Section 02221, Trenching, Backfilling and Compaction

5. Section 02270, Erosion and Sedimentation Control

1.2 REFERENCES

A. Sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies Connecticut Remediation Standard Regulations (RSRs)

B. CT DEEP RCRA "Contained-In" Policy Regulations of Connecticut State Agencies (RCSA) Sections 22a-449(d)-1 and Sections 22a-449(d) 101-113 - "Underground Storage Tank Regulations"

C. CGS Section 22a-455, Connecticut Hazardous Waste Regulations

D. 40 CFR Part 261, Identification and Listing of Hazardous Waste E.
40 CFR Part 268, Land Disposal Restrictions

1.3 DEFINITIONS

A. Natural Soil: Soil in which all substances naturally occurring therein are present in concentrations not exceeding the concentrations of such substance occurring naturally in the environment and in which soil no other substance is analytically detectable.

B. Contaminated Soil: Soils or fills determined by analytical results to contain oil and/or hazardous material at concentrations equal to or greater than a release notification threshold established by the RSRs.

C. Polluted Soil: Soils or fills determined by analytical results to be affected by a release of a substance, oil and/or hazardous material at concentrations greater than the laboratory reporting limit, but less than the cleanup criteria established by the RSRs.

D. Special Handling: Methods used to excavate, collect, grade, load, move, transport, stockpile, dispose, or otherwise manage a contaminated material or Contaminated/Polluted Soil are such that (1) the spillage, loss, co-mingling, or uncontrolled deposition of such material is minimized, (2) personal exposure to contaminants present in such a material are minimized, (3) the adverse impacts to the community and the surrounding environment from contaminants present in such material are minimized, (4) all applicable regulatory requirements applicable to such activity are satisfied.

1.4 SUBMITTALS

Submit a "General Permit for the Beneficial Use of Regulated Fill" to the Owner for review prior to submission to CT DEEP, if necessary. The Contractor may have to apply for the CT DEEP General permit for Contaminated Soil and/or Sediment Management (Staging and Transfer). If necessary, the Contractor shall identify a soil storage area for contaminated soil.

1.5 QUALITY ASSURANCE

A. All contaminated material excavated or otherwise collected, consolidated and managed during the course of the work will require Special Handling in accordance with these specifications, Contractor Health and Safety Plan, and all applicable permits, approvals, authorizations, and Regulations.

B. Perform the handling of contaminated materials with equipment and techniques in accordance with the performance requirements defined in this specification.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL

A. Provide all employees and subcontractor(s) with personal protective equipment and protective clothing consistent with the levels of protection for this work as indicated in Contractor's Health and Safety Plan.

B. Perform all contaminated material handling operations in accordance with standard engineering practices applicable to such activity, according to Connecticut DEEP regulations, and according to the provisions of Contractor Health and Safety Plan. Utilize methods which consider the health and safety of all Contractor and subcontractor personnel, support personnel, Owner, Owner's Project. Representative, and the surrounding environment.

C. All site health and safety controls shall be fully established and in operation prior to beginning any contaminated material handling activity. Site controls shall include but not be limited to work zones properly barricaded, decontamination facilities, air monitoring, and all support equipment and supplies including personal protective equipment. Comply with the requirements of Section 00470, Contractor Safety.

D. Minimize the spread of contaminated materials during handling. Transport vehicles used to move Contaminated/Polluted Soil at the Project Site shall be free from leaks. Trucks or other conveyances deemed unacceptable for use by the Owner shall not be used for the movement of contaminated materials.

E. Keep work areas, including but not limited to, areas adjacent to excavations, roadways leading to and from excavation areas, driveways, parking areas, and public roadways free of contaminated materials. If such materials are deposited, spilled, or spread, such material shall be removed promptly, and properly disposed of to the satisfaction of the Owner no later than the end of each working day or as requested by Owner.

F. Owner is the generator and will sign all manifests and bills of lading. Except for materials required to be transported under manifest, transport all Contaminated/Polluted Soil material under bills of lading (prepared by Owner) regardless of the chemical quality of the soils. The Owner or the District may defer the signing of manifests if it is not possible for a trained District employee to sign the manifest. The Contractor if trained to sign manifests, may sign as an “agent” for the District. The EH&S Department shall be provided the manifest for

review and shall give approval before the Contractor acts as an agent for the District.

3.2 EXCAVATION OF CONTAMINATED MATERIALS

A. Excavate contaminated/polluted soil to the limits required by the Owner.

B. The owner will evaluate field conditions to determine if additional excavation is required to remove additional contaminated materials. This evaluation may require the Owner to work in close proximity to Contractor's excavation equipment, and may require frequent pauses in the work Contractor shall work in a cooperative manner at all times during these operations to ensure the safety of Owner, and to allow for thorough field evaluations to be conducted.

1. When contaminated material excavation is undertaken, the Owner will make the final determination as to the limits of excavation required to achieve remediation objectives. Such limits may be greater than or less than the limits identified in 3.2A and shall be based upon actual conditions encountered at the time of excavation.

2. If required, the Owner will define those areas beyond the limits originally indicated where additional contaminated material excavation shall be required based upon field observations.

C. Contractor shall minimize the spread and loss of contaminated materials during excavation activities.

1. Following excavation, transport contaminated materials directly to the temporary controlled stockpile area for stockpiling. Excavated contaminated materials shall not be placed directly on the ground. The Contractor shall obtain all approvals and permits from the CT DEEP prior to using any area for soil storage or stockpiling.

D. Employ methods necessary to isolate contaminated materials from non-contaminated soils to the degree practicable.

E. Segregate construction debris from excavated contaminated materials at the point of excavation, prior to the movement of contaminated materials from excavation areas. The Owner may evaluate debris during excavation to determine if such material can be designated uncontaminated general demolition material.

F. Open excavations represent a substantial hazard. Contractor shall implement measures as appropriate to secure open excavations while awaiting Owner's confirmation test results from soils (refer to Item 3.5) or any other period when excavations remain open.

G. Implement measures to divert surface water around excavation sites to prevent water from directly entering into open excavations.

3.3 BACKFILL

A. Backfill excavations as soon as possible after the Owner has indicated that test results confirm remediation objectives have been achieved and backfilling may proceed.

3.4 UNFORESEEN CONTAMINATED MATERIALS

A. In the event that unforeseen contaminated materials are encountered during the course of the work, permit the Owner sufficient time to devise an appropriate course of action based upon the conditions present.

1. Until such appropriate course of action is devised, Contractor shall secure the work area in question such that it does not pose a health and safety risk.

2. The Contractor shall provide a soil management plan as part of the required submittals (Section 01300). Excavation, storage, transportation and disposal shall be conducted by the Contractor or a subcontractor who is experienced and qualified as per OSHA Regulations 29 CFR 1910.120 to manage such soils. No work shall start before the District had approved the referenced plan.

3.5 SAMPLING AND ANALYSIS

A. Contaminated or polluted soil characterization sampling will be conducted by the Owner.

B. The Owner will collect soil samples. Such samples may be collected from within Excavation Areas, or following deposition of Contaminated Soil in the Temporary Controlled Stockpile Area.

C. The Contractor shall notify the Engineer 14 calendar days prior to the start of excavation of Contaminated Soil. The Engineer will be responsible for contacting regulatory agencies in accordance with the applicable reporting requirements. Staging period for testing of the material by the District shall be at least 45 calendar days.

3.6 CONTAMINATED SOIL STORAGE

A. Contaminated Soil shall be placed in temporary storage immediately after excavation or, if it has been characterized in-place, shipped directly off site to the

approved and permitted treatment, recycling or disposal facility. The following paragraphs describe acceptable methods of soil storage.

B. Contaminated Soil shall be stored in segregated bins within the soil stockpile or in separate stockpiles so that there is a discrete bin or stockpile represented by each characterization sample that is chemically analyzed.

C. Storage units shall be in good condition and constructed of materials that are compatible with the soil to be stored. Each stockpile or bin shall be clearly labeled with an identification number and a written log shall be kept to track the source of Contaminated Soil in each temporary storage unit.

D. Stockpiles shall be constructed to isolate stored Contaminated Soil from the environment. The maximum stockpile size shall be 1000 cubic yards. Stockpiles shall be constructed to include a chemically resistant geomembrane liner free of holes and other damage. The ground surface on which the geomembrane is to be placed shall be free of rocks greater than 0.5 inches in diameter and any other object which could damage the membrane.

E. A bituminous runoff barrier or staked hay bales shall be provided surrounding the stockpile. Vehicle access points shall be bermed.

F. Stockpiles shall be covered with a geomembrane cover free of holes or other damage to prevent precipitation from entering the stockpile. The cover material shall be extended over the bituminous runoff barrier or staked hay bales and anchored or ballasted with sand bags or other suitable material to prevent it from being removed or damaged by wind.

G. Stockpiles shall be constructed and operated in accordance with the CT DEEP's General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer). A permit may be required depending on the quality and volume of soil stockpiled.

H. Roll-off units, if used to temporarily store Contaminated Soil, shall be water tight. A cover shall be placed over the units to prevent precipitation from contacting the stored soil.

I. The storage areas shall be located in the area indicated in the approved Work Plan.

J. Liquids are not anticipated to be generated. If they are generated, they shall be temporarily stored in containers that are water-tight and shall be located in an area approved by the Owner. Liquids shall be disposed of in a properly permitted offsite treatment, disposal or recycling facility approved by the Owner.

3.7 DUST CONTROL

A. Implement fugitive dust suppression to prevent unacceptable levels of dust resulting from handling operations associated with contaminated materials. Dust suppression methods shall be subject to approval from Owner. Supervise fugitive dust control measures and monitor airborne particulate matter as required.

END OF SECTION

SECTION 02140

DEWATERING AND DRAINAGE

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Obtain and pay for all permits required for temporary dewatering and drainage systems.

B. Design, furnish, install, operate, monitor, maintain and remove temporary dewatering and drainage systems as required and lower and control water levels to at least 2 feet below the lowest level of the excavation to permit construction in the dry.

C. Furnish the services of a licensed professional engineer (P.E.) registered in the State of Connecticut, to prepare dewatering and drainage system designs and submittals.

D. Furnish, maintain and remove temporary surface water control measures that are adequate to drain and prevent surface water entering excavation.

E. Collect and properly dispose of all discharge water from dewatering and drainage systems in accordance with State and local requirements and permits.

F. Work shall include the design, equipment, materials, installation, protection, and monitoring of geotechnical instrumentation required to monitor the performance of the dewatering and drainage system as required herein.

G. Protect all adjacent facilities and structures from damage due to dewatering and drainage system equipment and operations.

H. Remove temporary dewatering and drainage systems when no longer needed. Restore all disturbed areas.

1.02 RELATED SECTIONS

A. Section 01110, Environmental Protection Procedures.

B. Section 02145, Handling Contaminated Groundwater

C. Section 02160, Excavation Support Systems.

D. Section 02200, Earth Excavation

E. Section 02201, Earth Excavation Below Grade and Outside Limits of Trench.

1.03 DESIGN AND PERFORMANCE RESPONSIBILITY

A. The Contractor shall be solely responsible for the proper design and execution of methods for controlling surface water and groundwater.

B. Contractor shall be solely responsible for damage to properties, buildings or structures, sewers, water mains and other utility installations, pavement and work that may result from dewatering or surface water control operations**.**

C**.** Any design review and field monitoring activities by the District or the Engineer shall not relieve the Contractor of his/her responsibilities for the work.

1.04 SUBMITTALS

A. At least 2 weeks prior to the start of construction in any areas of anticipated dewatering, submit to the Owner for review and approval, a proposed dewatering and drainage plan. The dewatering and drainage submittal should include shop drawings and a written description of the proposed system layout, design methodology including calculations and the installation methods to be used. The submittal shall include descriptions of the dewatering and drainage system, observation wells, equipment drilling methods, hole sizes, filter sand placement techniques, sealing materials, development techniques, use of existing monitoring wells, etc. The plan shall identify the anticipated area influenced by the dewatering system and address impacts to adjacent existing and proposed structures. The Contractor shall not proceed with construction in any of these areas until the dewatering plan has been reviewed and approved by the Owner. It is expected that the proposed dewatering plan may have to be modified to suit the variable soil/water conditions encountered along the route.

B. Dewatering and drainage system designs shall be prepared by a licensed P.E., registered in the State of Connecticut, having a minimum of *5* years of professional experience in the design and construction of dewatering and drainage systems. The Contractor shall submit an original and three copies of the licensed professional engineer's certification on the form specified in Section 01300, stating that the dewatering and drainage designs have been prepared by the P.E., and that the P.E. will be responsible for their execution.

C. The Contractor shall coordinate dewatering and drainage submittals with the corresponding excavation and excavation support submittals.

D. <u>If less than one acre is disturbed:</u>
- The General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities does not apply.
- However, dewatering BMPs must be followed as described in the Connecticut Guidelines for Soil Erosion and Sediment Control.

<u>If between one and five acres are disturbed:</u>
- Apply for approval from the town where the work is taking place (review and written approval of soil and erosion plan and will follow all BMPs as described in the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities). If town does not review then must submit the soil and erosion plan to the DEEP for approval to be covered in accordance with the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities.

<u>If greater than five acres are disturbed:</u>
- A registration and a certification (with a soil and erosion/stormwater pollution control plan) must be submitted to DEEP and a permit must be obtained in accordance with the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities.

<u>If greater than 10 acres are disturbed:</u>
- A soil and erosion/stormwater pollution control plan must be submitted to DEEP and DEEP must approve the plan per the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities.

1.05 DEFINITIONS

A. Where the phrase "in-the-dry" is used in this Section, it shall be defined as an excavation subgrade where the groundwater level has been lowered to at least 2 feet below the lowest level of the excavation, is stable with no ponding water, mud, muck and shall be able to support construction equipment without rutting or disturbance and shall be suitable for the placement and compaction of fill material, pipe or concrete foundations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Pipe for observation wells, if required, shall consist of minimum 1-in I.D., Schedule 80 PVC pipe and machine slotted PVC wellpoints, maximum slot size 0.020-in.

B. Piping, pumping equipment and all other materials required to control surface water

and groundwater in excavations shall be suitable for the intended purpose.

PART 3 - EXECUTION

3.01 GENERAL

A. Methods of groundwater control may include but is not limited to perimeter trenches and sump pumping, perimeter groundwater cut off, well points, ejectors, deep wells and combinations thereof.

B. Control surface water and groundwater such that excavation to final grade is made in-the-dry, the bearing soils are maintained undisturbed and softening / instability or disturbance due to the presence or seepage of water does not occur. All construction and backfilling shall proceed- in-the-dry and flotation of completed portions of work shall be prohibited.

C. The Contractor shall consider the impact of anticipated subsurface soil / water when selecting methods of excavation and temporary dewatering and drainage systems. When groundwater levels are above the proposed bottoms of excavation, a pumped dewatering excavation will be required for predrainage of the soils to at least 2.0 feet below the lowest level of the excavation until construction has been completed to such an extent that the foundation, structure, pipe, conduit, or fill will not be floated or otherwise damaged. The type of dewatering system, spacing of dewatering units and other details of the work are expected to vary with soil/water conditions at a particular location.

D. Dewatering and drainage operations shall be conducted in a manner that does not cause loss of ground or disturbance to the soil that supports overlying or adjacent utilities or structures.

E. Locate groundwater control system components where they will not interfere with construction activities adjacent to the work area or interfere with the installation and monitoring of geotechnical instrumentation including observation wells. Excavations for sumps or drainage ditches shall not be made within or below 1H:1V slopes extending downward and out from the edges of existing or proposed foundation elements or from the downward vertical footprint of the pipe.

F. Install, monitor and report data from observation wells. Evaluate the collected data relative to groundwater control system performance and modify systems as necessary to dewater the site in accordance with the Contract requirements.

3.02 SURFACE WATER CONTROL

A. Construct surface water control measures to prevent flow of surface water into excavations. Provide temporary measures such as dikes, ditches and sumps.

B. Subgrades shall be sloped to prevent ponding of water.

C. Subgrades which become disturbed due to surface water shall be removed and refilled as directed by the Owner at no additional cost to the District.

3.03 EXCAVATION DEWATERING

A. At all times during construction, the Contractor shall furnish and maintain proper equipment and facilities to remove promptly and dispose of properly all water entering excavations. Excavations shall be kept in- the-dry, so as to obtain a satisfactory undisturbed subgrade foundation condition until the fill, structure or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural elevations.

B. Pipe and masonry shall not be laid in water or submerged within 24 hours after being placed or prior to backfilling. Water shall not flow over new masonry within 4 days after placement. Pipe and conduit which becomes submerged shall be removed and the excavation dewatered and restored to proper condition prior to reinstalling the pipe and conduit.

C. Excavation for foundations and structures shall be maintained in-the-dry for a minimum of 4 days after concrete placement. In no event shall water be allowed to enter an excavation and rise to cause unbalanced pressure on foundations and structures until the concrete or mortar has set at least 24 hours.

D. Dewatering and drainage operations shall at all times be conducted in such a manner as to preserve the natural undisturbed capacity of the subgrade soils at the bottom of excavations.

If the subgrade of the trench bottom or excavation becomes disturbed due to inadequate drainage, the Contractor shall excavate below normal grade as directed by the Owner and refill with screened gravel, compacted structural fill, etc. at the Contractor's expense to restore the bearing capacity of the subgrade to its original undisturbed condition.

E. If the method of dewatering does not-properly dewater the trench as specified, the Contractor shall install groundwater observation wells as directed by the Owner and not place any pipe or structure until the readings obtained from the observation wells indicate that the groundwater has been lowered a minimum of 2 feet below the bottom of the final excavation within the trench limits.

F. Where the groundwater level is above the proposed bottom of the excavation level, it is expected that some type of pumped dewatering system will be required for pre-drainage of the soils prior to final excavation and for maintaining the lowered groundwater level until construction has been completed to such an

extent that the structure, pipeline or fill will not be floated or otherwise damaged. It is further expected that the type of system, spacing of dewatering units and other details of the work will vary depending on soil / water conditions at a particular location.

G. Dewatering units used in the work shall be surrounded by suitable filter sand and no fines shall be removed by pumping. Pumping from the dewatering system shall be continuous until the pipe or structure is adequately backfilled. Stand-by pumps and a source of standby power shall be provided.

H. Water entering the excavation from precipitation or surface runoff shall be collected, drained to a sump and pumped from the excavation to maintain a bottom free from standing water.

I. The Contractor shall furnish, provide, install, operate, maintain, move and subsequently remove as often as necessary or required, all the pumps, piping, hoses, flumes, dams, equipment, labor and materials necessary or required for controlling surface and subsurface water entering the trenches, excavations and work areas, regardless of source or quantity, during the construction of the proposed facilities and the subsequent filtration of said waters prior to discharge.

J. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.

K. Dewatering facilities shall be suitably positioned or located so as to offer little or no interference with existing utilities, structures, etc., construction work, completed or on-going and the proper ingress or egress to residences, businesses and factories affected by such dewatering facilities. Drainage shall be disposed of in a suitable area only so that flow or seepage back into the excavated area will be prevented.

L. Dewatering facilities, procedures, measures, equipment, etc. which cause, or threaten to cause, damage to the Work, completed or under construction, or other existing facilities, shall be expeditiously modified or replaced so as to prevent further damage or threatened damage. The Contractor shall be responsible for determined the modifications or replacements to be made, at no additional expense to the District. The Contractor shall be responsible for the repair or replacement of any facilities of whatever nature, new, existing, or under construction receiving damage caused by or incidental to the operations of the Contractor, at no additional cost to the District. The Contractor shall take all additional precautions to prevent uplift of any structure during construction.

M. The Contractor shall continuously monitor pump effluents so as to ensure and prevent the unnoticed prolonged displacement, extraction or migration of particulate matter from the bottoms and sides of trenches or excavations resulting in the immediate or latent subsidence of same, which in turn, threaten to cause to

threaten the Work, completed or in progress, or other utilities, structures, adjacent properties, buildings, pavements or other surfaces, and the like.

N. Pumping water wells, well points, sumps, etc. shall be provided with suitable filters, screens and/or gravel packs to prevent the loss of fine particulates.

O. The recharge of groundwater to its static level shall be accomplished in a manner so as to maintain the undisturbed state of the foundation soils, prevent disturbance of fill and backfill material and prevent flotation or movement of structures.

P. The Contractor shall clean any and all new or existing sanitary sewers or storm drains and appurtenant facilities receiving any sediment from, by or incidental to the Contractor's dewatering operations during the prosecution of the Work, at no additional costs to the District.

Q. The Contractor shall employ such measures or methods as necessary or directed to avert surface runoff from entering trenches or excavation. Excavations and trench bottoms shall be maintained free of standing water.

R. Removal of dewatering equipment shall be accomplished after the system is no longer required; the material and equipment constituting the system shall be removed by the Contractor.

S. The Contractor shall take all necessary precautions to preclude the accidental discharge of fuel, oil, etc. in order to prevent adverse effects on groundwater quality.

T. It is the intent of these Specifications that the dewatering of lateral trenches shall occur under the influence of dewatering the mainline trenches as the main sewer installation proceeds, thereby requiring that laterals be installed in conjunction with the mainline installation.

3.04 DISPOSAL OF DRAINAGE

A. All water regardless of source or quantity which interferes with the Work shall be removed and treated in the proper manner. The Contractor shall not directly discharge water from trenches or excavations or other dewatering activities to existing watercourses, waterbodies or drainage facilities tributary thereto. All dewatering discharge shall be made through suitable and proper filtration system prior to entering any existing storm drainage facilities. THE REQUIREMENTS OF THE "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" SHALL BE STRICTLY ADHERED TO.

B. All water pumped or drained from the work shall be disposed of in a manner consistent with the Specifications, that will not result in undue interference with other work, completed or under construction, or damage to adjacent properties,

pavements or other surfaces, buildings or structures and utilities. The treatment and/or disposal of all pumped or drained water shall also conform to the applicable requirements of Section 01110, “Environmental Protection Procedures” and Section 02145, “Handling Contaminated Groundwater Treatment” (if applicable).

C. Existing sanitary sewers will be allowed to be used to discharge drainage following proper treatment as specified. The Contractor shall notify the District 48 hours in advance in writing prior to the discharge of drainage to the sewer system.

D. Where feasible and appropriate, dewatering wastewaters shall be infiltrated into the ground. Dewatering wastewaters discharged to surface waters shall be discharged in a manner that minimizes the discoloration of the receiving waters. Each plan shall include a description of the operations and structural practices that will be used to ensure that all dewatering wastewaters will not cause scouring or erosion or contain suspended solids in amounts that could reasonably be expected to cause pollution of waters of the State.

3.05 REMOVAL OF SYSTEMS

A. At the completion of the excavation and backfilling work, and when approved by the Engineer, all pipe, deep wells, wellpoints, pumps, generators, observation wells, other equipment and accessories used for the groundwater and surface water control systems shall be removed from the site. All materials and equipment shall become the property of the Contractor. All areas disturbed by the installation and removal of groundwater control systems and observation wells shall be restored to their original condition.

B. Leave in place any casings for deep wells, wellpoints or observation wells located within the plan limits of structures or pipelines or within the zone below 1H:1V planes extending downward and out from the edges of foundation elements or from the downward projected plan limits of the pipe, or where removal would otherwise result in ground movements causing adverse settlement to adjacent ground surface, utilities or existing structures.

C. Where casings are pulled, holes shall be filled with sand. Where left in place, casings should be filled with cement grout and cut off a minimum of 3-ft below finished ground level or 1-ft below foundation level so as not to interfere with finished structures or pipelines.

D. When directed by the Engineer, observation wells should be left in place for continued monitoring. When so directed, cut casings flush with final ground level and provide protective lockable boxes with locking devices. The protective boxes shall be suitable for the traffic and for any other conditions to which the observation wells will be exposed.

END OF SECTION

SECTION 02145

HANDLING CONTAMINATED GROUNDWATER

PART 1 - GENERAL

1.01 SUMMARY

A. Under this item, the Contractor shall be responsible for designing, procuring, installing, operating, cleaning, and dismantling a temporary groundwater treatment system to manage contaminated groundwater that may be generated during dewatering operations associated with ANY EXCAVATION.

B. This specification is performance based; the Contractor shall be responsible for the complete design, procurement, and installation of all materials, equipment and appurtenances necessary to meet the specified service conditions for the duration of the dewatering operations.

C. The discharge of all groundwater collected from construction dewatering activities within the project limits shall be directed to the sanitary sewer system existing within the construction corridor. Discharge and management of groundwater shall be accomplished in accordance with the Connecticut Department of Energy and Environmental Protection (DEEP) *General Permit for the Discharge of Groundwater Remediation Wastewater* (General Permit), and local regulations and ordinances. The Contractor shall be responsible for securing the General Permit and any other necessary state and local permits, including fees. The General Permit registration for discharge to the sanitary sewer must be submitted to the District's Environment, Health & Safety (EH&S) department for review and approval prior to submittal to the DEEP.

D. The Contractor shall be the General Permit applicant, the primary contact shall be the Metropolitan District, the site owner shall be the City or Town where the work is taking place.

E. The Contractor is hereby notified that a minimum lead time of three to six weeks or more can be expected to prepare, process, and approve the General Permit application, including coordination with the City / Town where the work is taking place. **No claim for delay will be considered based upon the Contractor's failure to accommodate the permitting process identified above.**

F. This item does not apply to the possible diversion of existing wastewater and stormwater flow in existing pipes around the construction site during

field activities. Diversion of existing flows remains the responsibility of the Contractor.

G. The Engineer will sample the groundwater treatment system discharge as required by the General Permit. The Contractor shall be furnished with copies of the analytical results by the Engineer for submittal to the appropriate agencies and shall be responsible for any modifications to the system needed to meet performance requirements.

1.02 HANDLING CONTAMINATED GROUNDWATER

A. Groundwater treatment, consisting of a settling tank or frac tank, particulate filter, activated carbon units and/or air stripper units, as required shall be located between the groundwater collection and removal sump and the sanitary sewer, and shall be designed to prevent sediments and solids, as well as contaminants in excess of the General Permit allowable effluent concentrations, from entering the sanitary sewer system. Estimated allowable effluent concentrations are provided in the attached General Permit and will be provided in the authorization provided by DEEP.

B. Equipment required for this Item shall be installed in a location and manner acceptable to the Engineer, and in accordance with the manufacturers' recommendations to prevent interference with work and traffic.

C. The Contractor shall make adjustments to the sanitary sewer tie-in, if necessary, to accommodate the treatment unit. The Contractor shall obtain approval from the Metropolitan District if modifications to the municipal sewer system are necessary.

D. The Contractor shall be responsible for treatment of the groundwater to meet performance requirements established in the General Permit.

E. Prior to initial effluent discharge into the sanitary sewer system, the Engineer will sample the treatment system discharge to verify conformance with requirements of the General Permit.

F. The Engineer will notify the Contractor as soon as practicable upon knowledge of pollutant levels exceeding the established levels in the General Permit. The Contractor shall be responsible for ceasing the discharge immediately.

G. Following recognition of an excedance of the established pollutant levels, and in accordance with the conditions and requirements of the General Permit, the Contractor shall be responsible for all subsequent notifications

to The District and DEEP, and procedural modifications necessary to reduce contaminant levels to acceptable criteria.

H. If required, the Contractor shall (re)start the discharge in accordance with all necessary approvals from the DEEP and in full compliance with the General Permit and any amendments imposed thereto.

I. Upon completion of operations involving the use of the settling tank or frac tank, particulate filters, carbon adsorption units and/or air stripper units, the Engineer will sample silt and sediment collected in the settling tank or frac tank for waste characterization determination. Disposal of the material shall be in accordance with Section 02260, "Handling , Transportation and Disposal of Regulated Soil." The Contractor is hereby notified that laboratory turnaround time is expected to be 14 working days or longer. **No claim delay will be considered based upon the Contractor's failure to accommodate the laboratory turnaround time as identified above.**

1.03 OPERATIONAL REQUIREMENTS

A. At a minimum the groundwater treatment system shall be designed to meet the following conditions:

Design Water Flow Rate:	40 gpm (or actual, whichever is greater)
Min. Operating Water Temp:	45° F
Settling Tank Detention Time:	4 hours

Note: The design flow rate is based on estimated flows. Actual flows may be higher.

1.04 SUBMITTALS

A. As required for the appropriate level of operation, the Contractor shall prepare and submit to the Engineer a groundwater pretreatment system design, stamped and signed by a professional engineer registered in the State of Connecticut including a schematic of the equipment proposed for the groundwater treatment system for review. At a minimum, the diagram shall show flow rates, pipe material and diameter, valve locations, sampling ports, discharge locations, etc. The Contractor shall also submit for review manufacturers' data sheets, assembly details and performance data on the treatment equipment, which may include settling tanks or frac tanks, particulate filters, activated carbon units and/or air stripper units. The pretreatment system design shall be submitted two weeks before startup and include the estimated flowrate, start and completion dates, flow sample frequency and proposed sample analytical methods.

B. The Contractor shall not be allowed to commence work activities until such time as the temporary groundwater treatment system design, as applicable, has been reviewed by the Engineer, installed in accordance with the accepted design, and is completely operational. **No claim for delay in the progress of the work will be considered for failure by the Contractor to design a system to meet this performance specification.** It is anticipated that this work will involve specialty services and/or proprietary products.

PART 2 - PRODUCTS

2.01 GROUNDWATER TREATMENT SYSTEM EQUIPMENT

The following paragraphs recommend groundwater treatment system equipment. This should not be construed as a definitive list of items but only an example of suggested technologies and of the level of detail expected for the submittals.

A. Settling tanks or frac tanks should be sized to contain the total discharge from the groundwater collection and removal sump for a period of four hours, and shall be fitted with an opening capable of accepting pumped flows from dewatering operations. The settling tank shall be constructed to prevent silts and solids from entering the sanitary sewer system.

B. Particulate filters should be a bag-type filter and be sized appropriately for the removal of particulates (silts and other solids) as needed.

C. Activated carbon units shall be properly sized for the flows under given operating conditions. Each container shall contain virgin activated carbon at start-up. The units shall be supplied with a removable, gasketed cover with bolt-type closing ring. The vessels shall have inlet and outlet couplings adequately sized for the flow and pressure rating. A drain connection shall also be provided at the bottom of the vessel. Pressure gauges shall be provided with the units so that the backpressure of each vessel may be monitored for potential failure.

D. Air stripper units shall be either a low-profile or packed tower type of system sized to meet the conditions of service described herein. The stripper shall be impact resistant, suitable for the contaminants to be treated and suitable for outdoor operation. The air stripping system shall have an integral effluent stilling well. The air stripper shall be equipped with an air pressure gauge as supplied by the stripper manufacturer. The air blower and motor shall be compatible with the air stripping system provided and shall be explosion-proof. The Contractor shall supply his own power source for the equipment. The exhaust from the stripper shall be configured to discharge the air stream a minimum of ten feet above

grade. The Contractor shall also be responsible for providing any air emissions treatment that may be required pursuant to DEEP regulations, and securing applicable discharge permits.

E. The Contractor shall be responsible for providing, installing, operating and maintaining equipment capable of metering the flow into the sanitary sewer system, such that the total daily flow can be recorded for each day of the discharge. The meter should be capable of measuring, indicating, and recording instantaneous and cumulative flow. The meter shall be used continuously during discharge.

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall ensure that all personnel involved with the groundwater treatment operations understand the terms of the General Permit issued for the project by DEEP. In the event of a conflict between the requirements of this Item and the General Permit, then the terms of the General Permit shall govern.

B. It is intended that the dewatering equipment operates at a rate that removes groundwater that naturally infiltrates the excavation. Care shall be taken not to cause a hydraulic gradient that draws groundwater into the excavation at an excessive rate.

C. Freeze protection methods and equipment shall be approved by the Engineer.

3.02 HANDLING CONTAMINATED GROUNDWATER

A. The Contractor shall furnish all labor, equipment, tools and materials and performing all operations in connection with the dewatering, control and diversion of water to maintain “in the dry” conditions of all excavations such that placement of various piping, manholes and appurtenances can be installed in accordance with the contract documents.

B. The Contractor shall provide settling tanks, particulate filters, carbon adsorption units and/or air stripper units, as required, at each dewatering operation to be located between the groundwater collection and removal sump and the sanitary sewer. The tanks shall have a minimum capacity equal to four hours of discharge from the sump, assuming a minimum flow rate of 40 gallons per minute. If additional flow is realized, then additional tank and system capacities shall be employed. The Contractor shall furnish and install a meter to measure and record flows.

END OF SECTION

SECTION 02150

BYPASS PUMPING, HANDLING STORM RUNOFF AND SANITARY SEWAGE FLOWS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope: Under this item the Contractor is required to furnish all materials, labor, equipment, power, maintenance, etc. to implement a temporary pumping system for the purpose of diverting the existing dry or wet weather flows around the work area for the duration of the project. Contractor shall obtain all the required permits including the bypass notification requirements for the Connecticut Department of Energy and Environmental Protection and the District prior to commencement of bypass operations. Bypass reporting procedures, as outlined in Section 01100 Section F., must be completed with all notifications made at least one week in advance.

B. The design, installation and operation of the temporary bypass pumping system shall be the Contractor's responsibility. The Contractor shall employ the services of a vendor who can demonstrate to the engineer that he specializes in the design and operation of temporary bypass pumping systems. The vendor shall provide at least five (5) references of projects of similar size and complexity in wastewater applications performed by his firm within the past three years within New England. The bypass pumping system shall meet the requirements of all codes and regulatory agencies having jurisdiction.

C. The Contractor shall maintain vehicular and pedestrian traffic during the entire bypass pumping operation, as necessary or required, and implement all the necessary or environmental protection procedures as may be required by the presiding authorities having jurisdiction over such matters. See Section 01570 – Maintenance and Protection of Traffic.

D. Related Work Specified Elsewhere:

1. Section 01100, Special Provisions.

2. Section 01300, Submittals.

3. Section 02200, Earthwork.

1.02 QUALITY ASSURANCE

A. The bypass pumping system shall meet the requirements of all codes and regulatory agencies having jurisdiction. The Contractor shall be responsible for damage due to sewer backups or overflows onto streets, yards and unpaved areas or into buildings, adjacent ditches, storm sewers, and waterways, including any subsequent remediation measures required or made necessary by such sewer backups or overflows.

1.03 VENDOR REQUIREMENTS

A. The vendor shall demonstrate the bypass pumping equipment is automated and is capable of functioning without the assistance of an operator. The vendor shall have a minimum experience of five years designing and supplying wastewater bypass systems.

B. The vendor shall demonstrate the bypass pumping equipment can operate for an extended period of time running dry. After this period of time, the pump shall have the capability of pulling a 25” Hg vacuum without adjustment or repair.

C. The vendor shall demonstrate sufficient inventory to perform normal rentals, including this project, <u>and</u> to maintain at least 100% reserve equipment <u>ON-SITE</u> for this project.

D. The vendor shall maintain 100% repair parts <u>ON-SITE</u> to fulfill any service or repair of all rental equipment.

E. The vendor shall demonstrate sufficient service staff and trucks to mobilize to repair or service equipment within one hour of a service call, twenty-four hours per day, seven days per week. The vendor shall have a service facility within ninety miles of the project.

F. The Contractor shall provide a list of phone and pager numbers to call for twenty-four hour service.

G. The bypass pumping system including all pumps, pipe, hose, valves, and fittings shall be provided by one bypass vendor. The fusion of any pipe or the bypass pumping system shall be provided by the vendor. All hydraulic calculations and drawings required by the submittals shall be provided by the bypass vendor and stamped by a State of Connecticut Licensed-registered Professional Engineer.

1.04 SUBMITTALS

A. Submittals shall conform to the requirements herein.

B. For bypass pumping systems, the Contractor shall submit, prior to installation, 6 (six) copies of detailed plans and description outlining all details and provisions of the temporary bypass pumping system. The plan shall be specific and

complete, including such items as schedules, locations, elevations, capacities of equipment, materials and all other incidental items necessary and/or required to insure proper operation of the bypass pumping system, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and permit conditions specified in these Contract Documents. No bypass pumping shall begin until all provisions and requirements have been reviewed and approved.
Shop drawings shall be submitted for all pumps, piping, and appurtenances for all types and sizes of equipment required for the bypass pumping work, as required.

C. The bypass pumping plan shall include but not limited to the following:

1. Staging areas for pumps;

2. Flow stoppage system, including pipe and channel plugging method and types of plugs;

3. Number, size, material, location and method of installation of pump suction piping;

4. Number, size, materials, method of installation and location of installation of discharge piping;

5. Bypass pump sizes, capacity, number of each size to be on site and power requirements;

6. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted);

7. Size and location of standby power generator, if required;

8. Downstream discharge plan;

9. Any thrust and restraint block sizes and locations;

10. Any temporary pipe supports and anchoring required;

11. Calculations for selection of bypass pumping pipe size;

12. Schedule for installation of and maintenance of bypass pumping lines;

13. Plan indicating selection location of bypass pumping line locations.

14. Pumps may not be benched down to make suction lift.

15. The suction side of the pumping system shall not exceed velocities of 10 feet per second. The discharge side of the pumping system shall not exceed velocities of 12 feet per second.

PART 2 - PRODUCTS

2.01 BYPASS PUMPING EQUIPMENT

A. All pumps used shall be centrifugal, end suction, fully automatic self-priming pumps that do not require the use of foot-valves, vacuum pumps, diaphragm pumps, or isolation valves in the priming system. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows pump and shall immediately develop 25” Hg vacuum without adjustment or repair or employ level control devices to regulate on/off or variable speed of the pump. Electric, hydraulic submersible or wellpoint type pumps are prohibited. Pumps shall be low noise sound attenuated, critically silenced units, rated for 85 dba at 7 feet, and 68 dba at 30 feet.

B. Seals shall be high pressure, mechanical self-adjusting type with silicon carbide faces capable of withstanding suction pressures to 100 psi running. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. Pump shall be capable of running dry, with no damage, for extended periods of time. All metal parts shall be of stainless steel. Elastomers shall be Viton. Pump end shall be manufactured to meet ISO 9002 certifications.

C. The pumps may be electric or diesel powered or a combination of both.

D. The Contractor shall provide the necessary start/stop controls for each pump.

E. The Contractor shall include one stand-by pump of each size to be maintained on site.

F. Back-up pumps shall be on-line, isolated from the primary system by a valve.

G. Pump shall not be connected by a common suction manifold. The use of PVC or Steel Pipe with Dresser Couplings will not be accepted. All pipe or hose will be rated for 25” Hg Vacuum.

H. In order to prevent the accidental spillage of flows, all discharge systems must be constructed of high-density polyethylene pipe with fused joints or Quick Disconnect discharge pipe with positive restrained joints, and leak proof connections. Discharge hose will only be allowed by specific permission of the engineer. PVC pipe with glued joints, aluminum “irrigation pipe”, steel pipe or PVC pipe with Dresser couplings will not be accepted. All joints must be 100% restrained. All discharge piping must have a minimum working pressure of 50

psi. All force main connections shall be made by using flanged composite hose with a working pressure of 150 psi.

I. Allowable piping materials will be fused, high-density polyethylene pipe, Quick Disconnect Pipe, or Flanged Composite Pressure Class Hose. SDR of discharge piping shall be suitable for the calculated discharge pressures. The vendor fusing the pipe must have a minimum of five (5) years experience fusing HDPE pipe of the same diameter required for the project.

J. Autodialer: Provide a single 115-volt, single phase autodialer and associated non-mercury float switches that shall provide 24-hr monitoring of pump activity during bypass operations and notify personnel via telephone of any alarm condition (high flow, loss of power, stand-by pump activation). Once activated, the unit will dial a telephone or pager number (up to eight maximum) of emergency personnel with a pre-recorded message stating the nature of the alarm. Provide cellular number for auto-dialer operation. An active telephone landline will not be provided. Dial emergency personnel as directed by the District.

K. POWER GENERATING FACILITIES. All power generating facilities shall be capable of providing all power necessary to operate any primary and secondary pumping systems. The facilities shall be maintained ready for use if required. These facilities shall adhere to all noise ordinances in the town the work is being performed.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL AND MAINTENANCE

A. The Contractor shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to actual operation. The Engineer will be given 24 hour notice prior to testing.

B. Any time the bypass pumping system is operating, an experienced operator shall be on site to monitor the operation, adjust pump speed, valves, etc., and make minor repairs to the system and report problems.

C. During bypass pumping, do not allow sewage to be leaked, dumped, or spilled in or onto any area outside of the existing sewer system. If a sewage leak, dump or spill occurs, Contractor shall notify the Construction Inspector and the Owner's Command Center (860-513-3388) ***immediately***.

D. In the event of accidental spill or overflow, immediately stop the discharge and take action to clean up, disinfect the spill and immediately notify the Owner.

E. In the event of rain, the Contractor shall coordinate the operation of bypassing with the Owner.

F. High flow conditions may require the Contractor to temporarily suspend work. Days on which work has been suspended shall not be considered working days and no additional compensation will be provided by the Owner.

G. 100% Spare parts for each type of pump and piping and adequate hoisting equipment for each pump and accessories shall be maintained on site as required.

H. The Contractor is forbidden to discharge wastewater onto private properties, public roadways or into drainage systems, canals, channels, creeks, wetlands as delineated on the Contract Drawings, or open water courses. The Contractor shall be responsible for any wastewater spills and back-ups and the cost and fines associated with their cleanup. The Contractor shall pay for all damage caused by wastewater spills and back-ups. The Contractor is responsible to report any discharges to the proper authorities.

3.02 INSTALLATION AND REMOVAL

A. The Contractor shall locate his bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the pipeline locations from the Engineer and/or the governing authority having jurisdiction. No bypass shall be performed without following the requirements outlined in Section 01100 F.

B. During all bypass pumping operations, the Contractor shall protect existing structures and equipment from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to the existing structures and equipment caused by human or mechanical failure.

C. Plugging or blocking of wastewater flows shall incorporate primary and secondary plugging and blocking devices. When plugging or blocking is no longer needed for performance of the Work, it is to be removed in a manner that permits the wastewater flow to slowly return to normal flows without surge, in order to prevent surcharging or other major disturbances downstream.

D. When working inside existing structures, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of gases, combustible or oxygen-deficient atmospheres, and confined spaces.

E. If possible the pipeline must be located off streets and sidewalks and on shoulders of the roads. When the bypass pipeline crosses streets and driveways, the Contractor may have to place the bypass pipelines in trenches and cover with temporary pavement. The Engineer will make the final determination if the bypass pipeline must be placed in a trench. Upon

completion of the bypass pumping operations, and after the receipt of written permission from the Owner, the Contractor shall remove all the piping, restore all property to pre-construction condition and restore all pavement.

F. When bypass pumping operations are complete, piping shall be drained into the sewer prior to disassembly.

3.03 PERFORMANCE

A. The Contractor shall provide, maintain and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept wastewater flow before it reaches the point where it would interfere with the Work.

B. The Contractor shall provide all necessary means to safely convey wastewater flow past the Work. The Contractor shall not be permitted to stop or impede the main flows under any circumstances.

C. The Contractor shall maintain wastewater flow around the WORK in a manner that will not cause surcharging of sewers, damage to sewers and that will protect public and private property from damage and flooding. The wastewater flow shall be maintained in a manner that protects downstream processes at the Water Pollution Control Facility from flooding and does not affect the quality of wastewater treatment as determined solely by the Owner.

D. The bypass system shall not require excavation to reduce the suction lift without the specific approval of the Engineer.

E. The Contractor shall protect water resources wetlands and other natural resources during performance of the Work.

F. The temporary bypass system must remain in operation until normal wastewater flow can be completely restored.

3.04 HANDLING STORM RUNOFF AND SANITARY SEWAGE FLOWS

A. The Contractor shall furnish, install, construct, operate and maintain temporary facilities such as pipes, structures, flow diversions, pumping equipment, bypasses and other protective facilities that are necessary for the proper conveyance, without interruption, of storm runoff and sanitary sewage flows through the limits of work during the construction, reconstruction or relocation of new and existing sanitary sewers, storm drains, house connections and manholes throughout the period of time in which the work occurs.

B. The Contractor shall handle both dry and wet weather flows, regardless of source of quantity of flow, and the protection of existing structures, utilities, etc., and any or all of the finished construction during dry or wet weather flows. The Contractor shall remove and dispose of all such temporary facilities upon the completion of the permanent work.

C. All materials shall conform to the requirements of the applicable items of these specifications and be subject to the approval of the Engineer.

D. In general, the pertinent provisions of the Contract Specifications shall govern the construction methods and procedures to be utilized by the Contractor for the work specified in this Section.

E. The Contractor shall investigate and verify sanitary sewer flows to evaluate the scope of facilities required for the proper conveyance and maintenance of said flows.

F. Sanitary flows may be bypassed to the parallel combined sewer on any street in this Contract provided the Contractor receives the prior written the approval of the Engineer. The combined sewers may overflow during wet weather or high flow conditions and for this reason, flow conditions in both the sanitary pipe and combined sewer pipe must be closely observed to ensure that bypassing of sanitary flows to the combined sewer will not exacerbate surface water pollution at downstream locations.

   1. If the Contractor chooses to bypass to the combined sewer, the Contractor shall demonstrate to the satisfaction of the Engineer that bypassing in this manner will not contribute to surface water pollution at downstream locations.

   2. In general, bypassing to the combined sewer will not be allowed during non-working hours as weather conditions and flow rates in these pipes can change rapidly.

G. The Contractor shall furnish the Engineer with his proposed detailing methods, procedures, equipment and materials to maintain flows and accomplish the work as described herein. The Contractor alone shall be responsible for the safety of the work, the protection of any facilities, utilities or adjoining properties, and for the successful completion of the work under this item.

H. The Contractor is hereby notified that due to the age and condition of the existing sewer systems, the flows in said systems may increase during storms or wet weather in general. All flows, regardless of source or quantity, must be maintained in an acceptable manner, so as not to overflow, backup or otherwise create a nuisance or health hazards, or in any way endanger adjoining properties or facilities.

I. To this end, the Contractor shall furnish, install or construct temporary facilities, connections or structures as necessary to convey and maintain the aforementioned flows during the prosecution of the work under this Contact. All such temporary facilities, structures or connections shall be designed and constructed to permit excavation for permanent work to the payment limits shown on the Contract Drawings. Failures of such temporary facilities which endanger or prevent proper completion of permanent work shall be corrected at the sole expense of the Contractor.

J. The Contractor shall provide, install, operate and maintain all temporary facilities such as pumping equipment and hoses, conduit, etc. to intercept flows before said flows reach points where they would interfere with the Contractor's work, to bypass the flows beyond the point of immediate construction and to return them to the drainage system of origination below said systems. The Contractor shall have on hand throughout the work such auxiliary pumping equipment, generators, etc., necessary to maintain flows in the event his primary equipment fails.

K. The Contractor shall divert flows as necessary to construct or reconstruct inverts, benching, or other portions of manholes or chambers as indicated on the Contract Drawings, or as directed by the Engineer.

L. The Contractor shall make temporary connections to keep all house connections laterals, utility lateral connections and storm connections in service, where said connections are encountered during the course of excavation for the proposed facilities. In the event said connections are removed by the Contractor for his convenience to facilitate the installation of proposed facilities, the Contractor shall make temporary reconnections as directed by the Engineer, until such time permanent repairs to the connections can be accomplished.

M. Unless otherwise provided for, or directed, all temporary facilities shall be bulkhead and/or removed and disposed of in an approved manner when no longer required.

N. The Contractor shall have no claim for additional compensation by reason of any delay or inconvenience in adapting his operations to the requirement for maintaining and conveying sanitary sewage flows.

O. No claim will be allowed for any delay, loss or expense to which the Contractor may become subject, directly to indirectly, by reason of the normal or wet weather flows in existing sanitary sewers or by reason of any damage to the existing sewers caused by his operations.

P. The Contractor shall in no way or manner anticipate any additional compensation for work performed in the removal and/or sand or grout filling of the existing

sewer system. Additional costs, if any, shall be included in the appropriate bid items of this Proposal.

END OF SECTION

SECTION 02160

EXCAVATION SUPPORT SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall properly design and furnish all labor and materials necessary and shall construct complete, all sheeting, bracing supports, and appurtenances required to perform the Work including sheet piling for building construction, trench support, all shafts and excavations, and cofferdams, permanent and temporary alike, as indicated on the Drawings and specified or as otherwise directed by the Engineer or required by agencies having jurisdiction over the Work.

B. Wood timber or steel sheeting shall be used except where otherwise indicated, specified or directed by the Engineer and agencies having jurisdiction over the Work. All excavation support systems shall be removed by the Contractor unless indicated on the Drawings or otherwise directed by the Engineer.

C. The work of this Section includes the removal and disposal of all excavation support system materials that are not to be left in place.

1.02 RELATED SECTIONS

A. SECTION 02200, EARTHWORK

1.03 DESIGN RESPONSIBILITY

A. The Contractor shall be fully responsible for providing complete and adequately designed sheeting as required and/or directed by the Engineer in accordance with the provisions set forth herein.

B. The Contractor shall engage, at his own expense, the services of a fully competent and qualified Professional Registered Engineer, hereinafter referred to as the "Contractor's Engineer", registered in the State of Connecticut for the design of all sheeting requirements to accomplish the Work specified, and for supervising the proper onsite installation associated therewith. The Contractor's Engineer shall be acceptable to the Engineer and demonstrate a minimum of five (5) years documented experience in the field of sheeting design and implementation. Prior to the actual employment of the Contractor's Engineer, the Contractor shall submit to the Engineer, to the full extent deemed necessary, a detailed resume stating the Contractor's Engineer's professional qualifications, related experience and references, and if requested, examples of work similar to

that required for the Work specified, for a general review by the Engineer and a means of documenting the requisite experience hereinbefore specified. Only after a satisfactory review of the Contractor's Engineer's overall qualifications by the Engineer in fulfillment of the requisite experience hereinbefore specified shall the Contractor finalize such employment and begin the design aspects of the Work.

C. The Contractor's attention is directed to the fact that acceptance of the Contractor's Engineer and/or his/her qualifications by the District and/or Engineer shall not be an overall approval of the Contractor's Engineer nor the sheeting designs and methods of installation employed during the Work. It being understood that all sheeting requirements necessary to accomplish the Work specified and/or indicated on the Drawings shall be designed by and installed under the direct supervision of the Contractor's Engineer who shall ultimately and fully bear the responsibility for that Work.

1.04 QUALITY ASSURANCE

A. The Contractor's Engineer shall provide and maintain throughout the sheeting installation and/or Work sufficient supervision and technical guidance to the Contractor for proper sheeting materials, equipment, operations and methods to the extent necessary to assure compliance with the Contractor's Engineer's design, all safety procedures and standard requirements for such Work, and the successful completion of the Work. Failure to provide and/or maintain such supervision and/or technical guidance during the Work shall in no way relieve the Contractor's Engineer and/or the Contractor from their overall responsibilities and obligations under the Contract, nor shall it be a basis for any claim by either against the District and/or the Engineer.

B. The Contractor and Contractor's Engineer shall fully indemnify and save harmless the District and Engineer and their agents, employees and representatives, from and against any and all claims as stipulated under the Agreement, whether directly or indirectly arising out of, relating to or in connection with the Work.

C. Quality assurances and proper safety procedures must be maintained at all times and be in strict accordance with the Contractor's Engineer's requirements and consistent with all federal, state and local regulatory agencies having jurisdiction over the Work. Should any conflict in requirements, regulations, restrictions or codes exist between that which is specified by the Contractor's Engineer and any federal, state or local agency, the more stringent application shall prevail.

1.05 PRODUCTS AND DESIGN CRITERIA

A. The overall sheeting design, quality of materials and methods of installation for all sheeting applications necessary to accomplish the Work specified shall be

consistent with the established standards of the construction industry and must, as a minimum, comply with the requirements for earth support systems for excavations as defined by current US Department of Labor, Occupational Safety and Health Act (OSHA) regulation (29 CFR Part 1926.650 Subpart P) applicable thereto, and any other federal, state and local agencies having jurisdiction and/or requirements pertaining thereto including Building Code requirements of the State or Connecticut. The design and implementation thereof shall be in accordance with sound engineering practice and modern accepted principles of soil mechanics, and shall include the effects of hydrostatic forces and all surcharge loads which may be reasonably anticipated. The methods employed shall be to the extent necessary to permit the proper and satisfactory installation and construction of the Work specified; to withstand all loads and forces encountered to provide soil restraint and control of water as required; to insure the safety of the workers and all other personnel on or near the site; to prevent injurious caving or erosion, or loss of ground; to maintain at all times proper and safe pedestrian, vehicular traffic on public and private streets, property and rights-of-way; and to stabilize unforeseen areas of work encountered during the execution of the Work as deemed necessary by the Engineer.

B. Where appropriate recommended and certified by the Contractor’s Engineer trench boxes can be used for this project. If the design includes using trench boxes or other pre-manufactured excavation support systems, then these systems must be certified by the manufacturer or Contractor’s Engineer before being utilized. The certification must be maintained at the job site while the work is under construction. Trench boxes must be kept in good condition and free from damage that might impair their function. The use of sheeting and/or steel road plates to extend the height of trench boxes will not be allowed.

C. The Contractor and Contractor's Engineer's attention is directed to the fact that should any additional investigations, subsurface explorations and/or other appurtenant information be required to fulfill the needs of this design, as determined by the Contractor's Engineer above and beyond that which is already provided under these Contract Documents, the Contractor shall obtain all such information and data required at the Contractor's own expense.

1.06 SUBMITTALS

A. Prior to the installation of any sheeting, the Contractor shall submit to the Engineer for documentation only, complete sheeting layout and detail drawings and sheeting descriptions bearing the Contractor's Engineer's State of Connecticut Professional Seal and signature. Said submission shall be for informational purposes only as a means of documenting the work to be performed and will not be considered an approval or disapproval of the design and/or the implementation thereof. At least one copy of the design shall be maintained at the job site while the work is under construction. This submission will not relieve the Contractor of the sole responsibility for the adequacy of the

system nor shall it be construed as an approval or guarantee that the Contractor's proposed equipment, materials and methods for the sheeting, bracing or appurtenances will be adequate for the work required at the locations of and for the Work required by this Contract.

B. Included as part of this submission, the Contractor's Engineer must provide design calculations and a complete listing of all references, codes, design data and specifications used by the Contractor's Engineer and required by any federal, state or local agency having jurisdiction, and to which the sheeting design conforms. Said submission shall be for informational purposes only as a means of documenting the work to be performed and will not be considered an approval or disapproval of the design.

1.07 CERTIFICATE OF DESIGN

A. The Contractor's special attention is directed to the required "Certificate of Design", the form of which is provided at the end of this Section. The Contractor and Contractor's Engineer shall complete this "Certificate" in its entirety for each location of work to be done, and any revisions associated there with, and submit it simultaneously with, as an integral part thereof, the sheeting submission. Any submission made without the completed "Certificate", appropriately signed and sealed, shall be returned to the Contractor. The District and/or Engineer hereby reserves the right to delay sheeting work and/or any work associated with, or dependent upon, the proper implementation of sheeting, without cause for claim against the District or Engineer, until a complete and appropriate submission is rendered. This Certification shall indicate that the sheeting, bracing and all appurtenances related thereto are designed to withstand the required loads, forces to be encountered, and to provide soil and water control, and are in compliance with these specifications and all federal, state or local agencies having jurisdiction over the Work to be performed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Timber sheeting and bracing:

1. Timber sheeting and bracing may be of any species of wood which will satisfactorily withstand all driving and construction stresses and the loads to which the members will be subjected. Sheeting shall not be less than 3 inches nominal thickness and shall be provided with continuous interlocks. All timber sheeting and bracing shall be free from worm-holes, windshakes, loose knots, decayed or unsound portions or other defects which might impair its strength or tightness.

B. Steel sheeting:

1. The shapes, sizes, and lengths of steel sheeting to be utilized are optional with the Contractor, providing they are satisfactory to withstand all driving and construction stresses and provided with continuous interlocks.

C. Bracing, Hardware and Fastenings:

1. Bracing and other supports whether of steel or of timber, shall be of the strength and dimensions necessary to satisfactorily withstand the loads to which they will be subjected. All bracing and other supports shall be free from any defects which might impair this strength. The Contractor shall provide all necessary hardware and fastenings necessary in connection with satisfactory installation of all sheeting and bracing.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The Contractor shall be fully responsible for ensuring adequate safety measures are provided at all times and shall comply with all safety requirements of federal, state and local agencies having jurisdiction over the Work. Installation of the sheeting including all bracing, supports and appurtenances, shall be adequate to permit the performance of the Work and be in accordance with the requirements of the Contractor's Engineer and the sheeting design associated therewith. Installation of trench boxes or pre-manufactured excavation support shall be in accordance with the Contractor’s Engineer’s design and manufacturer’s recommendations.

B. Any movements of sheeting and/or appurtenances which prevent the proper completion of the work shall be corrected at the expense of the Contractor.

C. Sheeting shall be installed in a manner which will prevent the disturbance of the surrounding surface, subsurface conditions and/or structures. Any such disturbances shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

3.02 REMOVAL

A. All sheeting approved for removal by the Engineer shall become the property of the Contractor and removed from the construction site.

B. All restoration and clean up shall be as indicated and as specified.

C. Unless otherwise indicated on the Drawings or directed by the Engineer, all excavation support systems shall be removed by the Contractor.

D. Where excavation support system is to be left in place, the Contractor shall cut it off at the elevation provided by the Engineer. The Contractor shall dispose of the removed portions of the excavation system.

THE METROPOLITAN DISTRICT

Contract Reference:

CERTIFICATE OF DESIGN

THE METROPOLITAN DISTRICT COMMISSION
(Owner)

Contract No: _____

_____

_____

dated _____,

In accordance with the provisions of the above referenced Contract, as the designated Contractor,

(Contractor's Name and Address)

hereby certifies that
(Contractor's Engineer's Name and Address)

(1) Is properly, licensed and currently), registered as a Professional Engineer in the State of Connecticut

(2) Is fully qualified to design and supervise the

(Item of Work and Location)

In accordance with the provision specified under the appropriate Section and/or Subsections of the Contract Documents:

(3) Has successfully designed and supervised

_____ (Item of work)

before and demonstrates a minimum of ten (10) documented years of proven experience in such field;

(4) Has personally examined the type(s) and locations(s) of the Work required under this Contract, and the overall conditions associated therewith, to the extent necessary to fully satisfy his or her professional responsibilities for designing and supervising the above referenced work;

(5) Has prepared the attached design in full compliance with the applications and requirements of the Contract Documents, sound engineering practice, modern accepted principles of construction, and all applicable federal, state and local laws, regulations, rules and codes having jurisdiction over the Work;

(6) Will provide sufficient supervision and technical guidance to the Contractor throughout the Work to ensure compliance with the design and all quality assurances necessary to successfully complete the Work;

(7) Hereby indemnifies and holds harmless the Metropolitan District and their agents, employees and representatives, from and against any and all claims, whether directly or indirectly, arising out of, relating to or in connection with the Work; and

(8) This "Certificate of Design" together with all applicable designs, drawings details, specifications on other related documents necessary to complete the Work as specified, have been signed and sealed pursuant to applicable state law.

CONTRACTOR: CONTRACTOR'S ENGINEER

_____	_____
(Contractor's Name)	(Engineer's Name)
By: _____	By: _____
_____	_____
(Name and Title)	(Name and Title)
Date: _____	Date: _____
(SEAL)	(P.E. STAMP)

(Note: Contractor to fully reference all attachments below:)

_____

_____

_____

_____

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this section includes making excavations in earth for trenches and structures, backfilling such excavations to the extent necessary, compacting backfill, furnishing the necessary material and constructing embankments and fills, and making miscellaneous earth excavations, doing miscellaneous grading, and removing and disposing of surplus material.

1.02 RELATED WORK

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES

B. SECTION 02140, DEWATERING AND DRAINAGE

C. SECTION 02160, EXCAVATION SUPPORT SYSTEMS

D. SECTION 02510, TEMPORARY AND PERMANENT PAVED SURFACE RESTORATION

E. SECTION 02905, UNPAVED SURFACE RESTORATION AND RESET MISCELLANEOUS ITEMS

1.03 SYSTEM DESCRIPTION

A. The program of excavation, dewatering, sheeting and bracing shall be carried out in such manner as to prevent undermining or disturbing all existing gas pipes, water pipes, sewers, drains, manholes, catch basins, culverts, electrical conduits, telephone ducts, utility poles, buildings or other structures or work previously completed by others.

B. All excavation, trenching and related sheeting, bracing, etc, shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650-652 Subpart P) and State requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.

C. Excavations shall be made in such manner and to such width as required to give suitable room for laying and jointing the piping or for construction of structures; all sheeting, bracing, and supports shall be furnished and placed; all cofferdamming,

pumping, and draining shall be done; and the bottoms of the excavations shall be rendered firm and dry and acceptable in all respects.

D. If the bottom of any excavation is taken out beyond the limits indicated or prescribed, the resulting void shall be backfilled at no additional cost to the District with thoroughly compacted granular base or crushed stone as directed by the Engineer.

1.04 REFERENCES

The following standards based on the latest edition form a part of this specification as referenced:

A. ASTM D1557 - TEST METHODS FOR MOISTURE-DENSITY RELATIONS OF SOILS AND SOIL-AGGREGATE MIXTURES USING 10-LB. (4.54-KG.) RAMMER AND 18-IN. (457MM) DROP.

B. ARTICLE M.02.01-2, CONN DOT FORM 816- BANK GRAVEL.

C. ARTICLE M.08.03-2 CONN DOT FORM 816- SAND.

D. OSHA 29 CFR 1926 Subpart P – Excavation.

1.05 SUBMITTALS

A. In accord with the General Conditions and Section 01300, six (6) copies of certifications, test results and source for bank gravel, sand and any other material imported on-site for use on fill or re-fill material shall be submitted for approval. The Contractor shall submit for approval the type of equipment to be used for excavation and compaction.

PART 2 - PRODUCT

2.01 NATIVE BACKFILL

A. Native backfill shall consist of granular soil excavated on site meeting the approval of the Engineer. The soil shall be of such a nature that it will form a stable dense fill. The soil shall not contain stones larger than 6 inches, vegetation, masses of roots, individual roots more than 12 inches long or more than 1/2-inch in diameter, trash, clays, or plastic fines. Organic matter shall not exceed two percent (2%). Nonplastic fines (silts) shall not exceed 20 percent (20%). These percentages shall be determined through testing the backfill material.

B. Filter fabric shall be non-woven Geotextile, Mirafi 140N, Mirafi 1100 N or approved equal.

C. Granular materials designated for use in the Section are specified in Section 02202.

D. All materials for excavation support designated for use in this Section are specified in Section 02160.

PART 3 - EXECUTION

3.01 PREPARATION

A. In cross-country areas within which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as directed.

B. No trees within streets and highways, or adjacent to the normal trench therein, shall be damaged or removed. In streets and highways where there is no permanent paving, only those trees, bushes or shrubs required for construction and approved by the Engineer shall, unless otherwise directed, be removed and disposed of. The unlimited removal of trees and brush will generally not be required or permitted. All trees, bushes or shrubs which are not to be removed shall be preserved and protected. Any trees, bushes or shrubs which are to be preserved and protected and which become damaged by the conduct of the work, shall be replaced at no additional cost to the District. Brush, small branches, slash, large trunks, stumps and all other surplus material and debris shall be removed from the site of the work.

3.02 PROTECTION AND RESTORATION OF PROPERTY

A. All existing buildings, utilities, pipes, poles, wires, fences, curbing, property line markers and other structures which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from injury. Should such items be injured, they shall be restored to at least as good condition as that in which they were found immediately before the work was begun at no additional cost to the District.

B. Fences interfering with the Contractor's operations shall be removed and (unless otherwise specified) later restored.

C. The trunks of trees which are adjacent to the work and are not to be removed shall be enclosed with substantial wooden boxes of such height as may be necessary to protect them from injury from piled material, from equipment, from the operations, or otherwise due to the work. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to the trees not to be removed and particularly to overhanging branches and limbs.

D. Branches, limbs, and roots shall not be cut except by permission of the Engineer. All cutting shall be smoothly and neatly done without splitting or crushing. When there is cutting or unavoidable injury to branches, limbs, and trunks of trees, the cut or injured portions shall be neatly trimmed and covered with an application of

grafting wax or tree healing paint as directed.

E. Cultivated hedges, shrubs, and plants which might be injured by the operations shall be protected by suitable means or shall be dug up, balled and temporarily replanted and maintained. After the construction operations have been substantially completed, they shall be replanted in their original positions and cared for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of kind and quality at least equal to the kind and quality existing at the start of the work.

F. Tractors, bulldozers, or other power-operated equipment, the treads or wheels of which are so shaped as to cut or otherwise injure paved surfaces, shall not be used or operated on these surfaces.

G. All property injured by the operations shall be restored to a condition at least equal to that in which it was found immediately before work was begun. Suitable materials and methods shall be used for such restoration.

H. Restoration of existing property and structures shall be done as promptly as practicable and shall not be left until the end of the construction period.

3.03 GENERAL TRENCH EXCAVATION

A. Trenches in pavement shall have the traveled way surface cut in a straight line by a concrete saw to the full depth of pavement. Excavation shall only be between these lines. Cutting operations shall not be done by backhoe, or other ripping equipment.

B. Trenches shall be excavated to such depths as will permit the pipe to be laid at the elevations, slopes, or depths or cover indicated on the drawings.

C. Where pipe is to be laid in crushed stone bedding, granular base or a concrete cradle, the trench may be excavated by machinery to, or to just below the designated depth, provided that the material remaining at the bottom of the trench remains undisturbed.

D. If pipe is to be laid in embankments or other recently filled areas, the fill material shall first be placed to a height of at least one foot above the top of the pipe before excavation.

E. The trench for the pipe shall be as shown on the Contract Drawings, the top of the barrel of the pipe shall be as shown on the Contract Drawings or as directed by the Engineer and the bottom of the trench shall be at the bottom of the pipe for water main or 6 inches below the bottom of pipe for sewer and drain. If excavating in rock, add an additional 6 inches below water, sewer or drain.

F. Pipe trenches shall be made as narrow as practicable and shall not be widened by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

G. Trenches shall be excavated with vertical sides between the elevation of the center of the pipe and elevation one foot above the top of the pipe.

H. The trench shall not be excavated beyond the trench limit. In case material is loosened or is removed beyond these widths, crushed stone, granular base, or concrete as appropriate shall be provided for the full width of the trench at no additional cost to the District, as directed by the Engineer.

I. Should it be necessary to lower the pipeline below the grade indicated on the drawings for any reason, the additional excavation and backfill shall be completed as directed.

3.04 SERVICE PIPE TRENCH EXCAVATION

A. Trench excavation for service pipes shall in general conform to Par. 3.03 above except that the trench shall be excavated 4-inches below the pipe bottom to allow placement of a sand bed.

3.05 WATERCOURSE CROSSINGS - NOT USED

A. To install the pipe across watercourses, temporary diversion works as may be necessary to properly handle the flow of the watercourse during the period of pipe installation work shall be furnished and installed. No direct payment will be made for this work, but the cost thereof will be considered as having been included in the prices bid per linear foot of pipelines.

3.06 EXCAVATION NEAR EXISTING STRUCTURES

A. Attention is directed to the fact that there are pipes, manholes, drains, and other utilities and structures in certain locations. An attempt has been made to locate all utilities, etc. on the drawings, but the completeness or accuracy of the given information is not guaranteed.

B. As the excavation approaches pipes, conduits, or other underground structures, digging by machinery shall be discontinued and excavation shall be done by means of hand tools, as required. Such manual excavation when incidental to normal excavation shall be included in the work to be done under items involving normal excavation.

C. Where determination of the exact location of a pipe or other underground structure

is necessary for properly performing the work, test pits may be required to be excavated to determine such locations. When such test pits may be properly considered as incidental to other excavation, the Contractor shall receive no additional compensation, the work being understood to be included as a part of the excavation.

3.07 SHEETING, BRACING AND PUMPING

A. Sheeting, bracing and other support methods as may be necessary, or shown on the Contract Drawings to support the sides of the excavation, to prevent undermining of the pavement or to protect from possible injury any pipes, sewers, ducts, poles, conduits or other structures existing in the streets, or highways shall be furnished and installed and shall be removed as the trench is refilled unless the Engineer orders it left in place.

B. All excavations shall be maintained in proper condition for carrying on the work and to this end all bailing, draining, or pumping which may be necessary to keep the trenches or other excavations free of water shall be done. No direct payment will be made for this work but the cost thereof will be considered as having been included in the price bid per linear foot of pipeline.

3.08 BACKFILLING AND COMPACTION; GENERAL

A. Material as indicated on the plan or other material approved by the Engineer shall be used in backfilling .

B. Loam and topsoil, loose vegetative matter, stumps, large roots, etc., shall be removed from areas upon which embankments will be built or material will be placed for grading. The subgrade shall be shaped as indicated on the drawings and shall be so prepared by forking, furrowing, or plowing so that the first layer of the fill material placed on the subgrade will be well bonded to it.

C. Frozen material shall not be placed in the backfill nor shall backfill be placed upon frozen material. Frozen material shall be removed or shall be otherwise treated as required, before backfill is placed.

D. After the subgrade has been prepared as specified, the fill material shall be placed and built up in successive layers until the required elevation is reached.

E. Layers of fill shall not exceed 6-inches in thickness (loose). Thinner layers shall be used if necessary to achieve the required compaction. In embankments the fill layers shall be slightly crowned or sloped to the edge(s) to facilitate drainage.

F. Each layer of material shall be compacted by the use of vibratory compaction equipment or rollers or other means to achieve the required compaction. At such points as cannot be reached by mobile mechanical equipment, the materials shall

be thoroughly compacted by the use of suitable power-driven tampers.

G. All backfill shall be compacted to at least the specified percent of maximum density as determined by ASTM D1557, Method C.

H. Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when the material is too wet, from either rain or too great an application of water, to compact it properly; at such times the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction. The water content of the soil shall be adjusted by wetting or drying as may be necessary to obtain proper compaction.

I. Refill material placed around pipes and structures shall be deposited on all sides to approximately the same elevation simultaneously.

3.09 COMPACTION REQUIREMENTS

A. The requirements for compaction of backfill shall conform to the following guidelines based on ASTM D1557 Method C:

LOCATION	PERCENT MAXIMUM DENSITY
Below pipe centerline	95
Above pipe centerline (below unpaved surface)	92
Above pipe centerline (below paved surface)	95
Embankments	92
Below pipe in embankments	95
Below structures	95

B. The Engineer reserves the right to perform the ASTM D1557 Method C tests on any backfilled area.

C. The maximum dry density and in-place dry density of the consolidated backfill will be determined by an independent professional soils engineer or qualified testing laboratory selected by the Engineer. The location and depths of in-place density tests will be determined by the Engineer.

D. Excavation shall be provided to permit in-place density tests at the locations and depths required by the Engineer.

E. Where the in-place density test indicates that the consolidated backfill does not meet the density requirements specified herein, the backfill material shall be replaced and/or reconsolidated to meet said density requirements at no additional cost to the District.

F. The District will pay the cost for the initial laboratory and in-place density testing by the soils engineer or testing laboratory. The Contractor shall pay the costs for the work conducted by the soils engineer or testing laboratory for any additional in-place density or laboratory testing required by the Engineer to test replaced and/or reconsolidated backfilled material.

G. The costs for excavation, refilling reconsolidation and any other work necessary to conduct the initial and additional testing shall have been included in the appropriate item or items of the Contract which include backfill consolidation.

H. No payment will be made for any bid item which includes backfill consolidation until the backfilled material meets the density requirements specified herein.

3.10 REFILLING GENERAL TRENCHES

A. As soon as practicable after the pipes have been laid, the trenches shall be refilled in 6-inch layers at least to a level 24-inches above the top of the pipe with bank gravel, compacted in accord with the requirements of Par. 3.09 above, each layer to be leveled and thoroughly compacted to the satisfaction of the Engineer before the next layer is deposited. Special care shall be taken to consolidate the gravel under the pipes and the whole work of refilling shall be done in a manner which will prevent subsequent settlement and injury to the pipe.

B. Above this level, except for the surfacing material, approved material from trench excavation may be used, with exceptions noted below, free of stones larger than 6-inches, deposited in 6-inch layers in town roads and 6-inch layers in state highways and compacted to the density described in Par. 3.09 above.

C. In the event the best of the excavated material is not considered acceptable refill material, the Engineer will direct that Special Trench Refill be furnished and placed. Excess excavated material shall be removed from the site and disposed of.

D. The whole work of refilling shall be done in a manner which will prevent subsequent settlement or injury to the pipe.

E. Ho Packing of trenches shall not be allowed over water mains.

3.11 REFILLING SERVICE PIPE TRENCHES

A. Refilling service pipe trenches shall in general conform to Par. 3.10 above except that prior to installing the service pipe the 4-inch thick sand bedding shall be placed and compacted to the density described in Par. 3.09 above.

3.12 BACKFILLING AROUND STRUCTURES

A. Backfill shall not be placed against or on structures until they have attained sufficient strength to support the loads to which they will be subjected. Material as indicated on the plan or other material approved by the Engineer shall be used in backfilling around structures and shall be compacted. Backfilling material shall be spread in horizontal layers not exceeding 6-inches in thickness (loose) and thoroughly compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557, Method C.

B. Tree stumps or roots more than 12-inches long or more than 1/2-inch in diameter and stones or rocks larger than 6-inches in greatest dimension shall not be considered suitable material for backfill around structures.

3.13 REMOVAL OF SURPLUS MATERIAL

A. The Contractor must obtain the Engineer's approval prior to disposing/reusing of any surplus material off site. The surplus material shall not be placed within wetlands, watercourses, floodplains, or stream channel encroachment lines. In addition, sensitive land use areas such as daycare centers, schools, healthcare facilities, public water supply watersheds etc. should be avoided. The Contractor must provide an approval letter from the owner of the property where the surplus material is to be placed.

B. The surplus material remaining after the trenches have been refilled shall be disposed of at no additional charge to the District. Streets and sidewalks shall be cleaned and left in all respects in as good condition as existed before the work began.

END OF SECTION

SECTION 02201

EARTH EXCAVATION BELOW GRADE AND OUTSIDE LIMITS OF TRENCH

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this Section includes, whenever it becomes necessary and so ordered by the Engineer, excavating the trenches to a greater depth or width than is shown on the Contract Drawings or specified herein, for the purpose of avoiding existing underground structures not shown on the Contract Drawings or because of unsatisfactory or unstable foundation or for any other cause that is determined by the Engineer.

B. Whenever the trench is excavated to a greater depth due to unsatisfactory or unstable foundation, acceptable bank gravel, crushed stone, granular base or sand, as determined by the Engineer, shall be placed and compacted to the grade of the bottom of the pipe under this item.

C. If, for any reason, the given trench is required to be changed after excavation has been done on this given line, the necessary excavation and refill shall be done.

D. Should the Engineer order additional excavation when the trench includes rock, refer to Section 02210.

1.02 RELATED WORK

A. SECTION 02200, EARTHWORK

B. SECTION 02202, SPECIAL TRENCH REFILL

1.03 REFERENCES

A. ASTM D1557 – Test methods for moisture-density relations of soils and soil-aggregate mixtures using 10-LB (4.54-KG) rammer and 18-In (457MM) drop.

PART 2 - PRODUCT

2.01 BACKFILL MATERIALS

A. Backfill materials shall conform to the requirements in SECTION 02202, SPECIAL TRENCH REFILL.

PART 3 - EXECUTION

3.01 GENERAL

A. The Work under this Section shall conform to the applicable requirements of SECTION 02200, EARTHWORK.

END OF SECTION

SECTION 02202

SPECIAL TRENCH REFILL

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this Section includes, whenever so directed by the Engineer, furnishing bank run gravel, crushed stone, processed trap rock base, sand or flowable fill as determined by the Engineer.

1.02 RELATED WORK:

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES

B. SECTION 02200, EARTHWORK

C. SECTION 02201, EARTH EXCAVATION BELOW GRADE & OUTSIDE LIMITS OF THE TRENCH

1.03 REFERENCES

A. The following standards based on the latest edition form a part of this specification as referenced:

1. SECTION M.01, CONN DOT FORM 816 - GRADATION OF AGGREGATE

2. SUBARTICLE M.02.02-2 (a), CONN DOT FORM 816 - LOSS ON ABRASION

3. ARTICLE M.03.02, CONN DOT FORM 816 - SAND

4. ARTICLE M.02.01-2, CONN DOT FORM 816 – BANK RUN GRAVEL

5. ARTICLE M.02.03, CONN DOT FORM 816 – GRANULAR BASE

1.04 SUBMITTALS

A. Submit in accordance with Section 01300.

B. Submit copies of certifications, test results and source for bank run gravel, crushed stone, granular base, sand and any other material imported on-site for use on refill material.

PART 2 - PRODUCT

2.01 CRUSHED STONE

A. Crushed stone shall conform to the requirements of Article M.01, No. 6 Gradation, CONN DOT Form 816 and Subarticle M.02.02.2 (a), CONNDOT Form 816, for loss on abrasion.

2.02 SAND

A. Sand shall conform to the requirements of article M.03.01.2, CONN DOT Form 816.

2.03 PROCESSED TRAPROCK BASE

A. Coarse and fine aggregate shall be combined and mixed by approved methods so that the resulting material shall conform to the following gradation requirements:

Square Mesh Sieves	Percent Passing by
2 1/2-in (63 mm)	100
2-in (50 mm)	95-100
3/4-in (19 mm)	50-75
1/4-in (6.3 mm)	25-45
#40 (425 µm)	5-20
#100 (150 µm)	2-12

B. Coarse aggregate shall consist of sound, tough, durable fragments of rock of uniform quality throughout. It shall be free from soft disintegrated pieces, mud, dirt, organic or other injurious material. When tested by means of the Los Angeles machine using AASHTO method T-96, it shall not have a loss of more than 50 percent.

C. Fine aggregate shall be natural sand, stone sand, screenings or any combination thereof. The fine aggregate shall be limited to material 95 percent of which passes a No. 4 sieve having square openings and not more than 8 percent of which passes a No. 200 sieve. The material shall be free from clay, loam and deleterious materials.

2.04 BANK RUN GRAVEL

A. Bank run gravel shall consist of sound, tough, durable particles of uncrushed gravel, free from soft, thin, elongated or laminated pieces and vegetable or other deleterious substances.

B. Bank run gravel shall conform to the following gradation and plasticity requirements:

Square Mesh Sieves	Percent Passing by Weight
Pass 3 ½”	100
Pass 1 ½”	55-95
Pass ¼”	25-60
Pass #10	15-45
Pass #40	5-25
Pass #100	0-10
Pass #200	0-5

C. The grading percentages specified above shall apply to the material after it has been delivered to the construction site as well as when tested at the pit or other source of supply.

D. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than eight (8) percent by weight, the sample will be washed as indicated. The amount obtained from washing shall be added to that obtained by dry sieving and the total amount passing each sieve shall meet the above gradation.

E. When the fraction of the dry sample passing the No. 100 mesh sieve is four percent or less by weight, no plastic limit test will be made.

F. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than four percent and not greater than eight percent by weight, that fraction shall not have sufficient plasticity to permit the performing of the plastic limit test using AASHTO Method T90.

G. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than eight percent by weight, the sample will be washed; and the additional material passing the No. 100 mesh sieve shall be determined by AASHTO Method T-146, except that the No. 100 mesh sieve will be substituted for the No. 40 mesh sieve where the latter is specified in AASHTO Method T-146. The combined materials that passed the No. 100 mesh sieve shall not have sufficient plasticity to permit the performing of the plastic limit test using AASHTO Method T90.

2.05 FLOWABLE FILL

A. Flowable fill or Controlled Low Strength Material (CLSM) used as backfill and fill shall be comprised of a mixture of Portland cement, coarse aggregate, fine aggregate and water. CLSM shall not contain fly ash. Materials, methods of preparation, and placement techniques shall comply with the requirements specified in Section 03302 as for concrete. Mix shall result in a flowable material

with a 28-day compressive strength of approximately 60 psi. Recommended mix shall be as follows:

Portland Cement	40 lbs/cu yd
Coarse Aggregate	1700 lbs/cu yd
Fine Aggregate	1900 lbs/cu yd
Water	325 lbs/cu yd, or as needed

B. Flowable fill shall not contain fly ash.

PART 3 - EXECUTION

3.01 GENERAL

A. All material shall be delivered to the work site in a timely manner and in sufficient quantities to insure efficient progress. Each load of material shall be furnished with a ticket identifying the type of material, source, date, weight, truck number and owner, etc., a copy of which shall be provided to the Engineer at the time of delivery.

B. Sufficient material shall be made available to allow the Engineer to make those tests required to insure the material conforms to these Specifications.

C. Placement and consolidation of the various materials furnished hereunder shall be done in accordance with Section 02200.

D. No recycled material shall be allowed for special trench refill.

END OF SECTION

SECTION 02230

GRANULAR MATERIALS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Granular fill materials are specified in this Section, but their use for pipe bedding, replacement of unsuitable materials, gravel cushion in rock excavation, pavement base, foundation support and similar uses are specified in detail elsewhere. The Engineer may order the use of fill materials for purposes other than those specified in other Sections, if in his/her opinion such use is advisable.

1.02 RELATED WORK

A. Dewatering and Drainage is included in Section 02140.

B. Rock and Boulder Excavation is included in Section 02210. - NOT USED

C. Trenching, Backfilling and Compaction is included in Section 02200.

D. Temporary and Permanent Paved Surface Restoration is included in Section 02510.

E. Erosion and Sedimentation Controls are included in Section 02270.

1.03 SUBMITTALS

A. Submit to the Engineer, in accordance with Section 01300, complete product data for materials specified in this Section.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C33 - Standard Specification for Concrete Aggregates.

2. ASTM D698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft (600kN-m/m)).

3. ASTM D422 - Test Method for Particle Size Analysis of Soils

4. ASTM D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

5. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)

B. Connecticut Department of Transportation Standard Specifications for Road, Bridges and Incidental Construction Form 816, and all addenda and supplements thereto, latest version.

C. American Association of State Highway and Transportation Officials (AASHTO).

D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. Laboratory Testing

1. At least 14 days prior to the placement of any backfill or fill materials, deliver a representative sample of the proposed materials weighting at least 50 pounds to the soils testing laboratory in accordance with Section 01300.

2. The Contractor will be responsible for engaging the services of a soils testing laboratory to perform the following:

a. Grain size analysis (ASTM D422) of samples to determine their suitability for use as backfill or fill material in conformance to the materials requirements specified herein.

b. Proctor analyses (ASTM D1557) to determine the maximum dry density required for compaction testing as specified elsewhere in the Contract Documents.

3. Test results and determination of suitability shall be delivered to the Owner no later than 3 days prior to the placement of backfill or fill materials.

1.06 DELIVERY, STORAGE AND HANDLING

A. If granular fill materials are delivered to the site prior to the placement approval, materials shall be stockpiled on site in areas as directed by the Owner. Provisions shall be implemented to minimize surface water impact on the stockpile. Removal and placement of granular fill material shall be done in a manner to minimize invasive soils adjacent to and beneath the stockpile.

PART 2 PRODUCTS

2.01 MATERIALS

A. Backfill and Fill materials shall be suitable, natural or processed mineral soils obtained from offsite sources, or graded crushed stone or gravel. Backfill and Fill materials shall be free of all organic material, trash, snow, ice, frozen soil, or other objectionable materials which maybe compressible or which cannot be properly compacted. Soft, wet, plastic soils which may be expansive, clay soils having a natural, in-place water content in excess of 30 percent, soils containing more than 5 percent (by weight) fibrous organic materials, and soils having a plasticity index greater than 30 shall be considered unsuitable for use as backfill and fill. Backfill and fill materials shall have a maximum of 1 percent expansion when testing is performed on a sample remolded to 95 percent of maximum dry density (per ASTM D698) at 2 percent below optimum moisture content under a 100 lbs/sq ft surcharge.

B. Processed Traprock Base

1. Coarse and fine aggregate shall be combined and mixed by approved methods so that the resulting material shall conform to the following gradation requirements:

Square Mesh Sieves	Percent Passing by
2 1/2-in (63 mm)	100
2-in (50 mm)	95-100
3/4-in (19 mm)	50-75
1/4-in (6.3 mm)	25-45
#40 (425 µm)	5-20
#100 (150 µm)	2-12

2. Coarse aggregate shall consist of sound, tough, durable fragments of rock of uniform quality throughout. It shall be free from soft disintegrated pieces, mud, dirt, organic or other injurious material. When tested by means of the Los Angeles machine using AASHTO method T-96, it shall not have a loss of more than 50 percent.

3. Fine aggregate shall be natural sand, stone sand, screenings or any combination thereof. The fine aggregate shall be limited to material 95 percent of which passes a No. 4 sieve having square openings and not more than 8 percent of which passes a No. 200 sieve. The material shall be free from clay, loam and deleterious materials.

C. Bank Run Gravel

1. Bank-run gravel shall consist of hard, durable stone and coarse sand, essentially free of all organic material, trash, snow, ice, frozen soil or other objectionable materials, uniformly graded and containing no stone having any dimension greater than 3-in. The grading of sizes and material shall be such that the gravel may be thoroughly consolidated..

2. Bank run gravel shall conform to the following gradation and plasticity requirements:

Square Mesh Sieves	Percent Passing by Weight
Pass 3 ½”	100
Pass 1 ½”	55-95
Pass ¼”	25-60
Pass #10	15-45
Pass #40	5-25
Pass #100	0-10
Pass #200	0-5

3. The grading percentages specified above shall apply to the material after it has been delivered to the construction site as well as when tested at the pit or other source of supply.

4. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than eight (8) percent by weight, the sample will be washed as indicated. The amount obtained from washing shall be added to that obtained by dry sieving and the total amount passing each sieve shall meet the above gradation.

5. When the fraction of the dry sample passing the No. 100 mesh sieve is four percent or less by weight, no plastic limit test will be made.

6. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than four percent and not greater than eight percent by weight, that fraction shall not have sufficient plasticity to permit the performing of the plastic limit test using AASHTO Method T90.

7. When the fraction of the dry sample passing the No. 100 mesh sieve is greater than eight percent by weight, the sample will be washed; and the additional material passing the No. 100 mesh sieve shall be determined by AASHTO Method T-146, except that the No. 100 mesh sieve will be substituted for the No. 40 mesh sieve where the latter is specified in AASHTO Method T-146. The combined materials that passed the No. 100 mesh sieve shall not have sufficient plasticity to permit the performing of the plastic limit test using AASHTO Method T90.

D. Structural Fill shall be gravel, sandy gravel, or gravelly sand free of organic material, loam, wood, trash, snow, ice, frozen soil or other objectionable material which may be compressible or which cannot be properly compacted. Structural Fill shall be well graded within the limits outlined in Article M.02.06, Grading "A" per the CTDOT.

E. Common Fill shall consist of mineral soil substantially free from organic materials, loam, wood, trash and other objectionable materials which may be compressible or which cannot be properly compacted. Common fill shall not contain stones larger than 6-in in any dimension and shall have no more than 20 percent passing the No. 200 sieve. Common Fill shall not contain granite blocks, broken concrete, masonry rubble or other similar materials. It shall have physical properties such that it can be readily spread and compacted during filling, Snow, ice and frozen soil will not be permitted.

F. Select Common Fill shall conform to the requirements of common fill except that the material shall not contain any materials larger than 2-in in largest dimension.

G. Screened Gravel shall consist of hard, durable, rounded or sub-angular particles of proper size and gradation and shall be free from sand, loam, clay, excess fines and deleterious materials. The gravel shall be graded within the limits outlined in Article M.01.01, No. 67 Stone per CTDOT.

H. Coarse Sand and/or Fine Aggregates shall conform to the requirements of article M 03.01.2, Connecticut DOT Form 816.

Square Mesh Sieves	Percent Passing by Weight
3/8-in	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	<3

I. Process Gravel /Process Aggregate shall be gravel, sandy gravel, or gravelly sand free of organic material, loam, wood, trash, snow, ice, frozen soil and other objectionable material and shall be well graded within the limits outlined in Article M.05.01 per CTDOT.

J. Crushed Stone shall consist of hard, durable, rounded, or subangular particles of proper size and gradation, and should be free of sand, loam, clay, excess fines, and other deleterious materials. The material should conform to Article

M.01.01, No. 6 Stone per CTDOT and Subarticle M.02.02.2 (a) CTDOT Form 816 for abrasion.

K. Sand for concrete, grout and masonry shall conform to ASTM C33 for fine aggregate. General purpose sand shall be select common fill.

L. Impermeable fill material shall be accepted by the Owner and tested to ensure a permeability coefficient of less than or equal to 1 x 10-7 cm/sec after compaction. The material shall be as specified under the Unified Soil Classification System as CL, CH, and SC in ASTM D2487. Prior to acceptance of the material it shall be tested by an outside independent soils analysis company for the maximum dry density as determined by the modified proctor test, ASTM D1557, Method B, C or D as applicable. Moisture content must be not wetter than 5 percentage points above nor less than 2 percentage points below the optimum moisture content as determined by ASTM D1557, Method B, C or D as applicable. Certified results shall be sent to the Engineer for approval and acceptance.

M. Flowable Fill

1. Flowable fill or Controlled Low Strength Material (CLSM) used as backfill and fill shall be comprised of a mixture of Portland cement, coarse aggregate, fine aggregate and water. CLSM shall not contain fly ash. Materials, methods of preparation, and placement techniques shall comply with the requirements specified in Section 03302 as for concrete. Mix shall result in a flowable material with a 28-day compressive strength of approximately 60 psi. Recommended mix shall be as follows:

Portland Cement	40 lbs/cu yd
Coarse Aggregate	1700 lbs/cu yd
Fine Aggregate	1900 lbs/cu yd
Water	325 lbs/cu yd, or as needed

2. Flowable fill shall not contain fly ash.

N. Lean Concrete shall be ready-mix, cast-in-place concrete conforming to the requirements of Section 03302. Minimum compressive strength shall be 2,000 psi after 7 days and 2,500 psi after 28 days.

O. Filter fabric shall be Mirafi, Type 140N; Dupont, Type PAR, Style 3401, or equal product by Amoco and shall conform to the following requirements:

1. Minimum grab strength of 120 lbs per ASTM D1682.

2. Equivalent open size (EOS) to be equal to or greater than the U.S. Standard Sieve No. 100 (0.210 mm) per ASTM D442.

3. Percent open area not to exceed about 25 percent. The percent open area is defined as the ratio of the sum of 20 or more individual open areas (times 100) to the sum of the corresponding 20 or more individual total areas.

4. Coefficient of permeability shall not be less than 10-2 cm/sec.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 02260

HANDLING, TRANSPORTATION AND DISPOSAL OF REGULATED SOIL

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Testing, handling, temporary storage, loading, transportation and disposal of Regulated Soil.

B. Establishment of protocols and implementation of procedures to protect worker health and safety as it relates to activities performed in the presence of Regulated Soil.

1.02 RELATED WORK

A. SECTION 01025 – MEASUREMENT AND PAYMENT

B. SECTION 01120 – SITE SPECIFIC HEALTH & SAFETY PLAN

C. SECTION 01300 - SUBMITTALS

D. SECTION 02140 – DEWATERING AND DRAINAGE

E. SECTION 02200 – EARTHWORK

F. SECTION 02270 – EROSION AND SEDIMENT CONTROL

1.03 DEFINITIONS

A. Clean Fill: Chemically clean fill as defined in Sec. 22a-209-1 of the Regulations of Connecticut State Agencies (RCSA). Clean fill does not contain any substances above natural background levels.

B. Contaminated Soil: Treated or untreated soil and/or sediment affected by a known or suspected release and determined, or reasonably expected to contain substances exceeding Residential Direct Exposure Criteria or GA Pollutant Mobility Criteria, as these terms are defined in the Remediation Standard Regulations (RCSA Section 22a-133k-1).

C. Hazardous Soil: Soil that is classified as a hazardous waste. Soil is classified as hazardous waste if it exhibits a hazardous waste characteristic or if it contains Resource Conservation and Recovery Act (RCRA) listed hazardous constituents above Connecticut's RCRA "Contained-In" Policy dated May 2002.

D. Hazardous Waste Disposal Area: Facility permitted for treatment, storage, or disposal of Hazardous Waste under RCRA and applicable Connecticut laws and regulations.

E. Polluted Soil: Soil affected by a release of a substance at a concentration above the analytical detection limit for such substance in accordance with RCSA 22a-133k-1(a)(45).

F. Regulated Soil: Includes Polluted Soil, Contaminated Soil, and Hazardous Soil.

G. Reusable Regulated Soil: Regulated Soil with substance concentrations above the analytical detection limit for such substance in accordance with RCSA 22a-133k-1(a)(45) and below the Industrial Direct Exposure criteria and the GB Pollutant Mobility criteria as these terms are described in the Remediation Standard Regulations (RCSA 22a-133k-1 through 3).

H. Soil: As used in this section soil includes natural soil, natural sediment, rock, brick, ceramics, concrete, asphalt paving fragments, and other miscellaneous debris and solid waste.

I. Special Waste Disposal Area: Facility permitted to receive solid waste under RSCA Sections 22a-209-1 through 13, or for facilities not located in Connecticut, permitted by the state to receive solid or industrial waste.

J. Treatment or Recycle Facility: Facility permitted to treat or recycle Regulated Soil that is permitted under RCSA 22a-174-3 and CGS Section 22a-454 or for facilities not located in Connecticut, permitted by the state in which the facility is located to treat or recycle Regulated Soil.

1.04 SUBMITTALS

Submit the following prior to commencement of Work in accordance with Section 01300 Submittals:

A. Transporter Information:

1. The name and address of transporters to be used on the project to transport Regulated Soil.
2. Current licenses and permits to operate in all states affected by transport.

B. Disposal Facility Information:

1. General Information
   a. Facility Name
   b. Facility Address
   c. Name of Contact Person
   d. Title of Contact Person

e. Telephone Number of Contact Person
f. Permit Number

2. Written confirmation from the facility that they are permitted to accept and will accept material of the general quality and quantity described by these Specifications.
   a. Facility permits
   b. Facility acceptance criteria.
   c. Written approval from Connecticut Department of Energy and Environmental Protection (CTDEEP) for disposal of Regulated Soil or use of Regulated Soil as cover soil in a solid waste disposal area at facilities located in Connecticut.
   d. Facility sampling frequency and analytical testing requirements.

3. The Metropolitan District (MDC) Environment, Health and Safety (EH&S) Department must approve the proposed transporter and disposal facility prior to the transport of any Regulated Soil.

C. Soil Management Plan: Submit to the Engineer within 30 calendar days after notice to proceed. The Soil Management Plan shall meet the requirements in Article 1.8.

Submit the following during execution or Work in accordance with Section 01300, Submittals:

D. All chemical analytical reports within 48 hours of the Contractor's receipt.

E. Registrations, letters, forms or applications to be sent to Federal, State of Local environmental regulatory agencies to the Engineer for review prior to submittal. Allow seven days for review. No adjustments for time or money will be made if re-submittals are required due to deficiencies.

F. Waste profile forms, material shipping records or any other forms, letters or documents that must be signed by the Owner to obtain authorizations for disposal no less than seven days in advance of shipping materials off site.

G. Shipping papers or manifests that must be signed by the Owner no less than 48 hours in advance of shipping materials off site.

H. Certified manifests or shipping paper and weight slips from the approved disposal facilities for Regulated Soil transported and disposed of off site within five days of Contractor's receipt. At a minimum, manifests and weight slips include the following:

<u>Manifests</u>
1. Transporter name, address and telephone number.
2. Description of material being transported.

Weight Slips

1. Truck number, date and time of load-out.
2. Gross weight, tare weight and net weight of truck.

1.05 QUALITY ASSURANCE

A. Regulatory Requirements: Perform earthwork, storage, transportation and disposal in compliance with applicable requirements of authorities having jurisdiction, including but not limited to the following:

1. Connecticut Department of Energy and Environmental Protection
   a. Connecticut Remediation Standard Regulations (RSRs), RCSA 22a-133k-1 to 3.
   b. Connecticut Hazardous Waste Regulations, RCSA 22a-449(c)-100 to 119.
   c. Connecticut Solid Waste Management Regulations, RCSA 22a-209-1 to 17.
   d. CTDEEP Bureau of Materials Management and Compliance Assurance - Disposal of Special Waste Authorization (DEEP-WEED-APP-200)

2. Massachusetts Department of Environmental Protection (MassDEP),
   a. Massachusetts Solid Waste Management Regulations, 310 CMR 19.000.
   b. Reuse and Disposal of Contaminated Soil at Massachusetts Landfills, DEP Policy No. COMM-97-001.
   c. MassDEP Bureau of Waste Prevention – Solid Waste Management – Special Waste Determination (BWP SW 14, 31).
   d. MassDEP Bureau of Waste Prevention – Solid Waste Management – Beneficial Use Determination (BUD) (BWP SW 40).

3. United States Department of Environmental Protection (EPA)
   a. Federal Hazardous Waste Regulations, 40 CFR 261-268.

4. The Owner will be the “generator” of all Regulated Soil. Owner information is as follows:
   a. Owner’s Name: The Metropolitan District
   b. ATTN: Andrew Perham
   c. Owner’s Address: 555 Main Street, Hartford CT 06103
   d. Owner’s Telephone Number: 860-278-7850 x3449
   e. Owner’s Facsimile Number: 860-251-6141]
   f. Project Name: Maple Avenue Sewer Replacement and Rehabilitation, Windsor, CT
   g. Site Address: Maple Avenue, Windsor

B. Contractor Qualifications: Conform to the following qualifications:

1. Work must be performed by Contractor personnel formally trained in procedures for Regulated Soil and water removal, with a proven history of successfully executing similar projects for a minimum of five years.
2. Work must be accomplished by Contractor with proper equipment and personnel experienced in similar work.

C. Contractor's Qualified Environmental Professional shall be currently licensed as a Licensed Environmental Professional (LEP) in Connecticut or a Licensed Site Professional (LSP) in Massachusetts

D. Contractor's Independent Analytical Laboratory: Conform to the following qualifications:

1. Accredited by the State of Connecticut Department of Public Health.
2. Have a minimum five years experience.
3. Ability to perform all analyses and provide analytical reports in accordance with the CTDEEP's Reasonable Confidence Protocols.

1.06 PROJECT CONDITIONS

A. The geotechnical and environmental reports listed below provide soil chemical analysis, and boring logs showing subsurface conditions. Information regarding the approximate ground water elevations is also included.

1. Environmental Memorandum, Maple Avenue Sewer Project, Windsor, CT, dated November 21, 2012. See Appendix A for project summary and boring logs.

2. Environmental Data Report, Maple Avenue Sewer Project, Windsor, CT, dated November 26, 2012. See Appendix B for environmental data.

B. Notify the Owner if unexpected subsurface conditions are encountered and discontinue work in area until Owner provides notification to resume work.

C. The Engineer shall be notified within 24 hours if Regulated Soil is discovered that has not been previously identified or if other discrepancies between data provided and actual field conditions are discovered.

D. Do not remediate, excavate, treat, or delineate Regulated soil, not previously identified, without consent from the Engineer.

1.07 HEALTH AND SAFETY

A. Designate, in name and title, a Health and Safety Manager (HSM) for all health and safety questions and concerns and provide a 24 hour contact phone number for the HSM.

B. Prepare a written Health and Safety Plan (HASP). Such plan must be approved by signature by the HSM and provide for compliance with OSHA regulations including, as applicable 29 CFR 1910.120. All elements in 29 CFR 1910.120(b) (4) shall be addressed in the HASP.

C. No work shall be performed related to excavation and handling of Regulated Soil until a HASP is submitted to the Engineer. However, the time to perform under the contract will begin on the date stipulated in the Notice to Proceed.

D. Maintain the HASP on site and keep it current with Regulated Soil management activities including loading for transportation and actual site conditions.

E. Provide personnel protective equipment as stipulated in the Contractor's HASP during the performance of Work in an area identified as potentially posing a risk to worker health and safety for workers employed by the Contractor and subcontractors.

F. Inform all on-site workers and subcontractors of all site safety rules, known or potential hazards, and emergency response procedures.

1.08 SOIL MANAGEMENT PLAN

A. Prepare a Soil Management Plan. The plan should be prepared and signed by the Contractor's Qualified Environmental Professional and at a minimum, this plan shall describe detailed procedures that the Contractor plans to follow regarding management of all soil and include the following components:

1. Schedule of activities
2. Soil characterization procedures including data quality management
3. Storage area construction materials
4. Storage location(s)
5. Soil segregation procedures
6. Soil loading location and method
7. Operating log to track soil origin, storage location and final disposition
8. Inspection and maintenance procedures
9. Erosion control, dust control, and anti-tracking procedures
10. Emergency and preparedness procedures
11. Transportation routes
12. Proposed transporters and disposal facilities
13. Site security

B. In most cases, street work does not allow the ability to store soil on-site for any period of time. The Contractor shall provide a method to load Regulated Soil directly into the transporting vehicle. A roll-off container may also be used if permitted by local authorities, but shall be removed from the work site daily.

C. No work shall be performed related to excavation and handling of Regulated Soil until the Soil Management Plan is submitted to and approved by the MDC EH&S Department. However, the time to perform under the contract will begin on the date stipulated in the Notice to Proceed.

C. Maintain the Soil Management Plan on site and keep it current with Regulated Soil management activities including loading for transportation and actual site conditions.

D. Inform all on-site workers and subcontractors of all site safety rules, known or potential hazards, and emergency response procedures.

1.09 SCHEDULING

Notify the Owner of Engineer a minimum of 14 calendar days prior to the start of excavation of Regulated Soil. The Engineer will be responsible for contacting regulatory agencies in accordance with the applicable reporting requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Stockpile Liner (if necessary): The stockpile liner shall be manufactured of new, first quality product designed and manufactured specifically for the intended use and have the following properties:

1. The material shall be U.V. resistant (black in color).
2. The material shall be impervious to prevent precipitation from entering the stockpile or liquids from migrating to underlying soil.
3. The material shall have a minimum thickness of 20 mil for the liner under the stockpile and 10 mil for the liner over the stockpile.

B. Roll-off Containers: If a roll-off container is used, it must be in good condition and water tight. A liner made from polyethylene and manufactured specifically for a roll-off shall be used. The roll-off shall have a cover that does not contain rips or tears.

C. Spill Response Materials: Provide appropriate spill response materials including, but not limited to the following: containers, adsorbents, shovels, and personal protective equipment. Spill response materials shall be available at all times when Regulated Soil is being handled or transported. Spill response materials shall be compatible with the type of soil and contaminants being handled and detailed in the Site Specific HASP.

D. Packaging, Labeling, Marking and Placarding Materials: Provide all of the materials required for the packaging, labeling, marking, placarding and transportation of Regulated Soil in conformance with Department of Transportation standards. Details in this specification shall not be construed as establishing the limits of the Contractor's responsibility.

PART 3 - EXECUTION

3.01 GENERAL

It is intended that Contractor activities for the transportation, handling and disposal of regulated soils on this project will involve management of only those materials that are encountered. It is not intended that the Contractor remediate soils located outside the limits of excavation anticipated for the project as designed.

Requirements of Section 02260 apply to the Contractor and any Subcontractors involved in activities related to Regulated Soils.

3.02 FACILITY APPROVAL

Upon receipt of the final approval from the treatment, recycling or disposal facility, immediately forward a copy of the approval to the Engineer. Coordinate facility approval, loading, transportation, and ultimate disposal of the Regulated Soil at the facility.

3.03 REUSE AND DISPOSAL

A. Regulated Soil may be:

1. Used as cover of disposed of in a Special Waste Disposal Area provided written approval is obtained from CTDEEP under RCSA Sec.22a-209-8 for use in an in-state facility.
2. Used as landfill cover at a Massachusetts permitted lined or unlined landfill under Massachusetts Department of Environmental Protection Policy # COMM-97-001.
3. Taken to a Special Waste Disposal are for disposal or use as cover in a facility not located in Massachusetts or Connecticut.
4. Taken to a properly permitted Treatment or Recycling Facility for thermal treatment or recycling.
5. Disposed in a Hazardous Waste Disposal Area.

B. Reusable Regulated Soil shall be:

1. Reused on site as backfill in locations above the water table and not in areas subject to erosion in accordance with requirements in Section 02200, Earthwork. Document the backfill location and depth in a scaled drawing for any Reusable Regulated Soil reused. In most cases, backfilling is discouraged. Any backfill material shall meet the structural/compaction requirements of Section 02200 Earthwork.
2. Managed, disposed of, or treated or recycled in accordance with the requirements for Regulated Soil, if not suitable for reuse or surplus.

C. Clean Fill shall be managed as specified in Section 02200 Earthwork.

D. Hazardous Soil is not expected to be encountered at the Site. Alternate arrangements will be required to handle such material. These arrangements shall be coordinated between the Contractor, Engineer and the MDC EH&S Department.

3.04 SAMPLING AND ANALYSIS

A. The Contractor's Qualified Environmental Professional shall sample Regulated Soil and have the samples analyzed as required by the treatment, recycling or disposal facility. This analysis can be performed on samples of in situ soil collected prior to excavation or on samples of excavated soil that has been stockpiled. The frequency of sampling and parameters analyzed shall be performed as required by the treatment, recycling or disposal facility.

B. The Contractor is hereby notified that the laboratory turnaround time is expected to be 14 working days.

C. Submit a copy of all analytical results to the Engineer within 24 hours of the Contractor's receipt of the laboratory report. Analytical data shall be kept confidential and distributed to the Owner and Engineer only.

D. Coordinate schedule so that Engineer may observe sample collection activities.

E. All chemical analysis shall be performed by a laboratory certified by the State of Connecticut Department of Health Services and as applicable in accordance with the State of CTDEEP Reasonable Confidence Protocols.

3.05 REGULATED SOIL MANAGEMENT

A. Manage Regulated Soil in accordance with the procedures in the approved Soil Management Plan, approved HASP and the CTDEEP General Permit for Contaminated Soil and/or Sediment Management (General Permit).

B. Direct load Regulated Soil, which has been characterized in place and ship it off site to the approved and permitted treatment, recycling or disposal facility. If Regulated Soil has not been pre-characterized or if direct loading is not otherwise feasible place the Regulated Soil in temporary storage immediately after excavation

C. On-Site soil storage locations are limited to those indicated in the drawings or to off-site locations established by the Contractor per the approved Soil Management Plan. No other location other than those indicated will be allowed for the storage of soil. Complete the Work in a manner that the soil storage capacity will not be exceeded.

D. Stockpiles shall be constructed to isolate stored Regulated Soil from the environment. Stockpiles shall be constructed to include liners free of holes

and other damage. The ground surface on which the liner is to be placed shall be free of rocks greater than 0.5 inches in diameter and any other object which could damage the material.

E. Contaminated Soil cannot be stockpile off site unless a registration has been submitted to and approved by the CTDEEP under the General Permit.

F. Provide a bituminous runoff barrier or staked hay bales surrounding the stockpile and berm vehicle access points.

G. Cover any stockpiles with a liner free of holes or other damage to prevent precipitation from entering the stockpile. Extend the cover material over the bituminous runoff barrier or staked hay bales and anchor or ballast with sand bags or other suitable material to prevent it from being removed or damaged by wind.

H. Roll-off units, if used to temporarily store Regulated Soil, shall be water tight. A cover shall be placed over the units to prevent precipitation from contacting the stored soil.

I. If miscellaneous liquids, such as rainwater that has contacted Regulated Soil, or decontamination wastewaters from washing of Regulated Soil, from equipment or materials are generated, temporarily store them in containers that are water-tight and located in an area approved by the Engineer. Dispose of liquids in a properly permitted off-site treatment, disposal or recycling facility approved by the Engineer.

3.06 WASTE PROFILES, SHIPPING RECORDS AND MANIFESTS

A. Prepare and submit to the Engineer for review all waste profiles and coordinate with disposal facilities.

B. Prepare all manifests and shipping documents required for review by the MDC's EH&S Department. Engineer will be responsible for obtaining Owner's signature. For most types of Regulated Soil signed documents are not required for each load.

C. Submit to Owner and the Engineer, prior to receiving progress payment, documentation certifying that all materials were transported to, accepted, and disposed of, at the selected receiving facility, including but not limited to:

1. Facility signed manifests.
2. Weight slips. Provide certified tare and gross weights for each load.

3.07 LOADING

A. Load Regulated Soil for transport from the project site to the facility following approval by the Engineer.

B. Load all Regulated Soil into the transportation vehicle in the location(s) specified in the Soil Management Plan.

C. Following load-out from the stockpile or direct loading each day, remove residual Regulated Soil resulting from spillage from the loading area and return it to appropriate stockpile, dump trailer or roll-off.

3.08 TRANSPORTATION

A. The Transporter shall adhere to all pertinent Federal, State, and local laws and regulatory agency policies.

B. No material shall leave the site until the treatment, recycling or disposal facility has approved shipments.

C. Cover transported Regulated Soil prior to leaving the point of generation and until it has arrived at the treatment, recycling or disposal facility.

D. All vehicles departing the site containing Regulated Soil are to be properly logged to show the vehicle identification number, driver's name, time of departure, destination, and approximate volume and content of materials.

E. All transportation vehicles are to have secure, watertight containers free of defects for material transportation and bed liners.

3.09 SPILLS

Immediately notify the Engineer in the event of a spill or release of a hazardous substance, pollutant, contaminant, or oil. The Owner or Engineer will be responsible for any notifications to regulatory agencies. Follow the pre-established procedures as described in the HASP and spill response plan in the Soil Management Plan. Immediately take containment actions to minimize the effect of any spill or leak. Cleanup shall be in accordance with applicable federal, state, and local regulations. Perform additional sampling and testing as directed by the Engineer to verify spills have been cleaned up. Spill cleanup and testing shall be done at no additional cost to the Owner.

END OF SECTION

SECTION 02270

SEDIMENTATION AND EROSION CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and perform all installation, maintenance, removal and area cleanup related to sedimentation control work as shown on the Drawings and as specified herein. The work shall include, but not necessarily be limited to; installation of temporary access ways and staging areas, silt fences, silt sacks, catch basin protection, dewatering bags, stone filter boxes, stone filter berms, sediment removal and disposal, device maintenance, removal of temporary devices, temporary mulching, excelsior matting installation and final cleanup.

1.02 RELATED WORK

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES

B. SECTION 02200, EARTHWORK

C. SECTION 02276, SILT FENCE

1.03 SUBMITTALS

A. Submit to the Engineer, in accordance with Section 01300, within 10 days after award of Contract, technical product literature for all commercial products to be used for sedimentation and erosion control.

1.04 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 or 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. Sedimentation and erosion control measures 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 Wetlands Commission Permit appended to these Contract Documents.

PART 2 - PRODUCTS

2.01 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 816.

B. Berm structural stone shall be rip-rap as follows: - NOT USED

1. Rip-rap shall be sound, durable rock which is roughly rectangular shape and of suitable quality to insure permanence in the condition in which it is to be used. Rounded stones, boulders, sandstone or similar soft stone will not be acceptable. Material shall be free from overburden, spoil, shale and organic material, meet the Engineer's approval and be well graded within the following limits:

Weight of Stone	Percent Finer by Weight
40 lb	100
12 lb	50
3 lb	0

C. Silt Fence

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

D. 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.

E. 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.

F. A matting blanket shall be installed in all seeded drainage swales and ditches as shown on the Drawings or as directed by the Engineer. Excelsior matting shall be AMXCO Curlex Blanket by American Excelsior Company, Arlington, TX or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Silt Fence Installation

1. Silt fences shall be positioned as indicated on the Drawings and as necessary to prevent off site movement of sediment produced by construction activities as directed by the Engineer.

2. Dig trench approximately 6-in wide and 6-in deep along proposed fence lines.

3. Install pre-fabricated silt fence according to manufacturer's instructions.

4. Backfill trench with excavated material and tamp.

B. Stone Filter Berm Installation

1. Place berm structural stone across channel just below lower sandbag wall at work area. Face upstream side of structural berm with crushed stone.

C. Staging areas and access ways shall be surfaced with a minimum depth of 4-in of crushed stone.

D. Sediment Control Device

1. Silt sacks shall be located in catch basins under the grating as needed.

2. Dewatering bags shall be installed in areas where flooding is minimized to homes and streets preferably near catch basins or open grassy areas.

3.02 MAINTENANCE AND INSPECTIONS

A. Inspections

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 or into the vent trench, promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.

B. Device Maintenance

1. Silt Fences

a. Remove accumulated sediment once it builds up to 1/2 of the height of the fabric.

b. Replace damaged fabric, or patch with a 2-ft minimum overlap.

c. Make other repairs as necessary to ensure that the fence is filtering all runoff directed to the fence.

2. Filter Boxes

a. Replace crushed stone when it becomes saturated with silt.

3. Stone Filter Berm

a. Muck out trapped silt from dewatering operations when it has built up to within 6-in of the top of the berm.

b. Replace crushed stone filter when saturated with silt.

4. The contractor shall monitor both silt sack and dewatering bag performance during construction and maintain them or replace them as they become full of sediment and cannot drain properly.

5. Add crushed stone to access ways and staging area as necessary to maintain a firm surface free of ruts and mudholes.

3.03 TEMPORARY MULCHING

A. Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 30 days of the completion of rough grading.

B. Straw mulch shall be applied at rate of 100 lbs/1000 sq ft and tackified with latex acrylic copolymer at a rate of 1 gal/1000 sq ft diluted in a ratio of 30 parts water to 1 part latex acrylic copolymer mix.

3.04 MATTING BLANKET

A. Matting blankets shall be installed in all seeded drainage swales and ditches as shown on the Drawings and as directed by the Engineer in accordance with manufacturer's instructions. The area to be covered shall be properly prepared,

fertilized and seeded with permanent vegetation before the blanket is applied. When the blanket is unrolled, the netting shall be on top and the fibers in contact with the soil over the entire area. The blankets shall be applied in the direction of water flow and stapled. Blankets shall be placed a minimum of three rows (of 4-ft) wide (total approx. 12-ft width) within the drainage swale/ditch and stapled together in accordance with manufacturer's instructions. Side overlaps shall be 4-in minimum. The staples shall be made of wire, 0.091-in in diameter or greater, "U" shaped with legs 10-in in length and a 1-1/2-in crown. The staples shall be driven vertically into the ground, spaced approximately two linear feet apart, on each side, and one row in the center alternately spaced between each size. Upper and lower ends of the matting shall be buried to a depth of 4-in in a trench. Erosion stops shall be created every 25-ft by making a fold in the fabric and carrying the fold into a silt trench across the full width of the blanket. The bottom of the fold shall be 4-in below the ground surface. Staple on both sides of fold. Where the matting must be cut or more than one roll length is required in the swale, turn down upper end of downstream roll into a slit trench to a depth of 4-in. Overlap lower end of upstream roll 4-in past edge of downstream roll and staple.

1. To ensure full contact with soil surface, roll matting with a roller weighing 100 lbs/ft of width perpendicular to flow direction after seeding, placing matting and stapling. Thoroughly inspect channel after completion. Correct any areas where matting does not present a smooth surface in full contact with the soil below.

3.05 REMOVAL AND FINAL CLEANUP

A. Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner. Regrade all areas disturbed during this process and stabilize against erosion with surfacing materials as indicated on the Drawings.

END OF SECTION

SECTION 02276

SILT FENCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this section includes furnishing all labor, equipment and materials and performing all operations in connection with the erection of the silt fence, as shown on the Contract Drawings, complete as shown, specified and directed.

1.02 RELATED WORK:

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES

1.03 QUALITY ASSURANCE

A. All materials shall be inspected and tested at the place of manufacture as required by the standard specifications to which the material is manufactured.

B. All materials shall be subject to inspection by the Engineer after delivery to the job site and may also be subject to inspection at the place of manufacture by a representative of the District.

C. In addition, the District reserves the right to have any or all materials inspected and/or tested by an independent service at either the manufacturer's plant or elsewhere. Such inspection and/or tests shall be at the District's expense.

1.04 REFERENCES

The following standards, based on the latest edition, form a part of this specification as referenced:

A. ASTM D 4355 - TEST METHOD FOR DETERIORATION OF GEOTEXTILES FROM EXPOSURE TO ULTRA VIOLET LIGHT AND WATER (XENON-ARC TYPE APPARATUS).

B. ASTM D 4491-99a - TEST METHODS FOR WATER PERMEABILITY OF GEOTEXTILES BY PERMITIVITY.

C. ASTM D 4533 - TEST METHOD FOR TRAPEZOIDAL TEARING STRENGTH OF GEOTEXTILES.

D. ASTM D 4632 - TEST METHOD FOR GRAB BREAKING LOAD AND ELONGATION OF GEOTEXTILES.

E. ASTM D 4833 - TEST METHOD FOR INDEX PUNCTURE RESISTENCE OF GEOTEXTILES, GEOMEMBRANES AND RELATED PRODUCTS.

1.05 SUBMITTALS

A. In accordance with the General Conditions and Section 01300, six (6) copies of the manufacturer's data sheet(s) shall be submitted for approval.

B. A certified statement that inspection and all of the specified tests have been made and met shall also be submitted.

PART 2 - PRODUCT

2.01 SILT FENCES

A. The silt fence shall be comprised of a sediment control fabric and reinforced netting stitched together with heavy duty thread top and bottom, stapled to hardwood posts. Hardwood posts shall be 4.5 feet long, spaced a maximum 8 feet apart with lower ends tapered to facilitate driving into compacted soil. A six (6") inch flap at the bottom of the fence shall be used to toe in the sediment control barrier to prevent silt migration under the barrier. Each section of fence shall be supplied with a coupling to attach adjoining sections.

B. The silt fence shall conform to the following test requirements:

Mechanical Properties	Test Method	Unit	Minimum Average Roll Average	
			MD	CD
1. Grab Tensile Strength	ASTM D 4632	kN (lbs)	0.53 (120)	0.53(120)
2. Grab Tensile Elongation	ASTM D 4632	%	50	50
3. Trapezoid Tear Strength	ASTM D 4533	kN (1bs)	0.22 (50)	0.22 (50)
4. Mullen Burst Strength	ASTM D 3786	kpa (psi)	1654 (2410)	
5. Puncture Strength	ASTM D 4833	kN(lbs)	0.31 (70)	
6. Apparent Opening Size (AOS)	ASTM D 4751	mm (U.S. Sieve)	0.212 (70)	
7. Permittivity	ASTM D 4491	sec-1	1.8	
8. Flow Rate	ASTM D 4491	$1/min/m^2$ ($gal/min/ft^2$)	5500 (135)	
9. UV Resistance (at 500 hours)	ASTM D 4355	% strength retained	70	

C. The silt fence shall be ENVIROFENCE as manufactured by Mirafi, Inc., North Carolina or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The silt fence shall be installed in accordance with the manufacturer's written recommendations and as shown on the Contract Drawings or as directed by the Engineer. Bottom of silt fence shall be buried. Only if ground is frozen shall bottom of silt fence be covered with crushed stone.

END OF SECTION

SECTION 02317

UNDERGROUND WARNING TAPE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Underground Warning Tape

1.02 SUBMITTALS

A. Shop Drawing Submittals

1. Product Data

PART 2 - PRODUCTS

2.01 MATERIALS

A. The non-detectable warning tape shall be polyethylene tape manufactured in accordance with the following technical data:

TECHNICAL DATA

PROPERTIES	**TEST METHOD**	**V ALUE**
Thickness	ASTM 02103	0.004” (4 mils)
Elongation	ASTM D882-75B	> 400%
Tensile Strength	ASTM 0882	MD: 1830 psi TO: 2350 psi

B. Tape shall be 6 inches wide.

C. The warning tape shall be heavy gauge 0.004 inch polyethylene and shall be resistant to acids, alkalis and other soil components. It shall be highly visible in the following colors with the associated phrases stamped in black letters and repeated at a maximum interval of 40 inches.

Type of Utility	Color	Warning Message
Sanitary Sewer	Green	Caution – Sanitary Sewer Buried Below
Storm Drain	Green	Caution – Storm Drain Buried Below
Water	Blue	Caution – Water Line Buried Below
Electric	Red	Caution – Electric Line Buried Below
Telephone / Communications	Orange	Caution – Telephone Line Buried Below
Gas	Yellow	Caution – Gas Line Buried Below

E. The tape shall be of the type specifically manufactured for marking and locating utilities.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All buried pipe and fittings shall be installed with metallic-lined underground warning tape located approximately 24” above top of pipe.

END OF SECTION

SECTION 02510

TEMPORARY AND PERMANENT PAVED SURFACE RESTORATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The work specified in this section includes furnishing and installing all base and surfacing materials for temporary and permanent paved surfaces for roads, driveways, sidewalks, curbs, etc. shown on the Contract Drawings, complete as shown, specified or directed. The work includes, all as shown, specified or directed, transporting materials, clearing, excavation, disposing of unused excavated materials, placing and consolidating base material, installing concrete roadbase and pavement, placing and compacting bituminous road, sidewalk and driveway surfaces, replacing concrete sidewalks, drives, curbs, etc., replacing bituminous curbing, resetting or replacing stone curbing and all incidental work, all to approved grades and as specified, except as otherwise provided for.

1.02 RELATED WORK

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES

B. SECTION 01570, TRAFFIC REGULATIONS AND TRAFFIC CONTROL

C. SECTION 02200, EARTHWORK

D. SECTION 02515, CONCRETE WALKWAYS

E. SECTION 02575, PAVEMENT MARKINGS

1.03 QUALITY ASSURANCE/EQUIPMENT

A. All permanent repairs to be completed under the Contract shall be done by a paving contractor (Individual, Partnership or Corporation) who has regularly engaged in the construction of curbs, walks and/or roadways for the last two (2) years and has filed a satisfactory Performance Bond and Insurance as may be required by the Town of Windsor or ConnDOT authority having jurisdiction.

B. Permanent pavement repairs or trench restoration shall be completed by use of a mechanical paver unless specific exception is granted by the Engineer or Town of Windsor or ConnDOT authority.

C. The requirements herein shall in no manner relieve the Contractor of full responsibility for all pavement and trench restoration work to be performed under

this Contract nor shall the requirements invalidate any of each and every other right the District has under this Contract or by law.

D. All necessary equipment, components and accessories to acceptably complete the work as anticipated in the Contract Drawings and as specified or as ordered by the Engineer shall be available for use on the project. All equipment used on the project work shall be used in conformance with the manufacturer's recommendations of use and shall be in good operating condition.

E. All pavement placed shall be maintained by the Contractor for a period of 1 year. During this period, all areas which have settled or are unsatisfactory for traffic shall be refilled and replaced by the Contractor at his/her expense. During this period, all areas that have settled or are unsatisfactory for traffic shall be refilled and replaced within 10 days of notification by the Owner and at no additional cost to the Owner. Provide a Guarantee Bond, in the amount of 1 percent of the total contract price, in a form acceptable to the Owner, to ensure repairs.

1.04 REFERENCES

The following standards based on the latest edition form a part of this specification as referenced:

A. SECTION 6.02, CONN DOT FORM 816 – REINFORCING STEEL

B. SECTION 8.15, CONN DOT FORM 816 - BITUMINOUS CONCRETE LIP CURBING

C. SECTION 9.21, CONN DOT FORM 816 - CONCRETE SIDEWALKS

D. SECTION 9.22, CONN DOT FORM 816 - BITUMINOUS CONCRETE SIDEWALK, BITUMINOUS CONCRETE DRIVEWAYS

E. ARTICLE M.02.02, CONN DOT FORM 816 - SUBBASE

F. SECTION M.03, CONN DOT FORM 816 - PORTLAND CEMENT CONCRETE

G. SECTION M.04, CONN DOT FORM 816 - BITUMINOUS CONCRETE MATERIALS

H. ARTICLE M.06.01.3, CONN DOT FORM 816-WIRE AND WELDED STEEL WIRE FABRIC

1.05 SUBMITTALS

In accord with the General Conditions and Section 01300, six (6) copies of the following information shall be submitted for approval:

A. Name and address of Contractor's paving Sub-Contractor (if any)

B. Names and addresses of materials suppliers.

C. Any technical information for Engineer's approval of alternate methods and materials.

PART 2 - PRODUCT

2.01 SUBBASE

A. Subbase material shall conform to the requirements of Article M.02.02, CONN DOT FORM 816.

2.02 PROCESSED AGGREGATE BASE

A. Base material shall conform to the requirements of Article M.05.01, CONN DOT FORM 816.

2.03 CONCRETE

A. Concrete for road repairs shall conform to the requirements of Section M.03, CONN DOT FORM 816.

2.04 REINFORCING STEEL

A. Reinforcing steel shall conform to the requirements of Article M.06.01, CONN DOT FORM 816.

2.05 BITUMINOUS CONCRETE MATERIALS

A. Bituminous concrete, tack coat, joint sealer, etc., for road repairs shall conform to the requirements of Section M.04, CONN DOT FORM 816.

2.06 STONE CURBING - NOT USED

A. Stone curbing shall conform to requirements of Article M.12.06, CONN DOT FORM 816.

2.07 OTHER MATERIALS

A. Other materials required for repairs to driveways, curbs, and sidewalks shall be as specified under the various CONN DOT FORM 816 Sections referenced for the item to be repaired.

PART 3 - EXECUTION

3.01 GENERAL

A. All paved surfaces, including roads, driveways and sidewalks, bituminous curbs, and similar structures which are in any way disturbed by the work shall be replaced in as good a condition as existed or better than existed prior to the beginning of work. New material shall be supplied to replace that lost or damaged in these structures. All work shall conform to the specifications hereunder.

B. Where shown or ordered, sidewalks, curbs, etc., shall be restored or replaced on different grade or alignment, which work, with associated grading, without additional payment therefore.

C. Cement concrete and bituminous concrete sidewalks and wheel chair ramps, including driveway transitions and aprons, shall conform to the details shown on the Drawings, to relevant sections of the Connecticut DOT Standard Specification, the ADA Accessibility Guidelines for Buildings and Facilities (ADAAAB), to Section 02515 (Concrete Walkways), and the U.S. Architectural and Transportation Barriers Compliance Board latest ed. Accessible Right-of-way Design Guide. The Contractor and subcontractor shall have a set of these standards at the site at all times

D. Notice of the date and location of all permanent paving repair and restoration work shall be given to the Town of Windsor or ConnDOT authorities at least twenty-four (24) hours before the work is started.

3.02 TEMPORARY PAVED SURFACE REPAIRS

A. Prior to the close of operations each day, the trench or excavation in pavement or sidewalks shall be backfilled in accord with Section 02200. A temporary surface of processed aggregate base and bituminous material shall be placed over the trench or excavation and rolled to an acceptable smooth surface. The bituminous material shall be a hot mix except the Contractor may use a cold mix when approved by the Engineer if the hot mix is unavailable because the asphalt plants are shut down. The Engineer may order a temporary walk surface to be constructed and maintained, similar to the temporary surface specified for roadways, in any location where the Engineer deems public convenience or safety is necessitated.

B. The travelway shall be maintained in a smooth and safe condition until final surface restoration. Should the temporary surfacing settle or become displaced, the affected area shall immediately be repaired with compacted bituminous surfacing to provide a smooth, safe travelway.

3.03 PERMANENT PAVEMENT REPAIRS

A. All paved state highways shall be repaired in accord with the Highway Permit included in these Specifications.

3.04 PERMANENT PRIVATE DRIVEWAY REPAIRS

A. Paved driveways which are cut or damaged longitudinally by trenching shall be repaved to their full width for the length so damaged. Driveways cut or damaged transversely shall be repaved to their full width from, and including, the area of damage to the street end of the paved surface.

B. Residential bituminous concrete driveways removed, damaged or otherwise affected by the Contractor's operations shall be replaced in accord with the requirements of Section 9.22-Bituminous Concrete Driveway, CONN DOT FORM 816. The thickness of the processed aggregate base materials shall be at least 8-inches thick and the bituminous concrete shall be at least 3-inches thick after compaction.

C. Commercial bituminous concrete driveways removed, damaged or otherwise affected by the Contractor's operations shall be replaced in accord with the requirements of Section 9.22-Bituminous Concrete Driveway, CONN DOT FORM 816. The thickness of the gravel subbase shall be at least 10" thick, processed aggregate base materials shall be at least 8-inches thick, the bituminous concrete binder course shall be at least 2-inches thick after compaction, and the bituminous concrete wearing course shall be at least 2-inches thick after compaction

C. Concrete driveways removed, damaged or otherwise affected by the Contractor's operations shall be replaced, in general, in accord with the requirements for bituminous concrete driveways. Concrete shall be the same thickness as that removed, but in no case shall the concrete be less than 8-inches thick. Reinforcing steel shall be at least 6"x6" - 8/8 welded wire fabric.

D. Non-paved driveways shall be repaired using materials equivalent to or better than those removed and of the same thickness.

3.05 PERMANENT CURB REPAIRS

A. Bituminous concrete curbing that is removed, damaged or otherwise affected by the Contractor's operations shall be replaced in kind and in accord with the requirements of Section 8.15-BITUMINOUS CONCRETE LIP CURBING, all of CONN DOT FORM 816, as applicable. All curbing shall conform to the dimensions of the replaced or adjacent curbing unless directed otherwise by the Engineer.

B. Existing bituminous curbing shall be replaced adjacent to those areas of the roadway that are excavated and/or regraded as a result of the installation of

sanitary sewer piping. Saw cut the existing curbing at a point beyond the limit of excavation and pavement removal. The new concrete curb shall be aligned with the curb inlet or guttermouth of the new basin.

3.06 SIDEWALK REPAIRS

The sidewalks shall be installed in accordance with Section 02515 and the following requirements:

A. Concrete sidewalks that are removed, damaged or otherwise affected by the Contractor's operations shall be replaced in kind in accord with the requirements of Section 9.21-CONCRETE SIDEWALKS of CONN DOT FORM 816, as applicable. The thickness of the concrete shall be 5". At driveway crossings the thickness of the concrete shall be 8" reinforced with at least 6"x6" - 8/8 welded wire fabric as indicated on the drawings. For the sidewalk, the base shall be 8" thick processed aggregate base material.

B. Sidewalks of other materials shall also be replaced using materials equivalent to or better than those removed and to the same thickness. Driveways and paving areas shall be constructed in accordance with Section 9.22.03, the ADA Accessible Guidelines for Building and Facilities (ADAAB) and the U.S. Architectural and Transportation Bamers Compliance Board Latest ed. Accessible Right-of-way Design Guide. Paved driveways and parking areas which are cut or damaged longitudinally by trenching shall be as shown on the Drawings and as directed by the Owner. Concrete driveway ramps as shown on the Drawings or damaged or otherwise affected by the Contractor's operations shall be replaced with Section 9.24.03, the ADA Accessible Guidelines for Building and Facilities (ADAAB) and the U.S. Architectural and Transportation Compliance Board (AAB) Latest ed. Accessible Right-of-way Design Guide. Prior to installing concrete, or pavement, Contractor shall establish grade elevations at all wheel chair ramp locations, and shall set proper transition lengths according to the referenced standards and the Drawings. All wheel chair ramp joints and transition sections which define grade changes shall be formed, staked and checked by the Owner prior to placing cement concrete. All grade changes are to be made at joints. Should the Contractor neglect to inform the Owner, or install them incorrectly, and if the ramps do not meet requirements, the Contractor shall immediately remove them and replace them with ones that conform to ADA/AAB. This shall be done at the Contractors own expense. Concrete for wheelchair ramps shall be 5-inch thick. Concrete for driveway aprons shall be 8-inch thick. Bituminous concrete shall be 3-in thick surface course constructed in two equal lifts.

3.07 PAVEMENT MARKINGS

A. Reline all streets with pavement markings equal in type and location where existing prior to paving.

B. Where pavement markings have been removed as a result of construction operations, the Contractor shall repaint markings within ten days after placement of initial paving, and maintain temporary pavement markings until final paving is completed.

C. Restore pavement markings after:

1. Installation of temporary pavement trench repair.

2. Installation of permanent pavement trench repair.

3. Installation of permanent pavement full-width overlay.

D. Temporary and permanent pavement markings shall match the existing layout of markings.

E. Traffic markings shall be installed in accordance with the Town of Windsor and Connecticut DOT specifications and Section 02575.

F. The location of temporary detours shall be restrained to their original condition.

3.08 ADJUSTING EXISTING MANHOLE AND VALVE ELEVATIONS

A. Adjust the elevations of existing manhole frames and covers should it become necessary as a result of road regrading.

B. Adjustments to manhole frames and covers to be made by using manhole adjusters acceptable to the District or the affected utility.

C. Castings owned by private utilities shall be raised by their own forces. The Contractor shall be responsible for coordinating this work.

D. The method of adjusting castings shall be as follows: Cut around manhole castings a minimum of 8-inches from casting. Excavate and if required rebuild up to 12-inches of masonry below the bottom of the casting. Backfill with suitable material and compact to bottom of casting. Place high, early strength cement or bituminous concrete collar, as directed, to approximately 2 inches below the raised casting grade.

E. Castings which need to be raised or adjusted to complete permanent curb to curb paving shall be done immediately prior to paving.

3.09 OVERLAY OF STREETS - NOT USED

A. The milling and overlay work shall not begin until the last excavation has been backfilled for 90 days and, where used, permanent concrete patches have cured.

B. Prior to placement of the overlay, the entire road width over which overlay is to be placed shall be broom cleaned and tack coated and, for full width pavement, keyways shall be cut at all intersecting streets.

C. The overlay pavement shall be 2 inches thick. The limits of the overlay are indicated in the Pavement Schedule and on the Contract Drawings.

D. The existing curb reveal shall be maintained by cold planing to a depth of 2 inches across the full width of the street, curb to curb.

E. At the limits of the overlaying, the Contractor shall cold mill the existing pavement to provide a 20 foot long smooth transition between the overlay and the existing pavement. At the limits of overlay at side streets, saw cut the existing pavement.

F. The Contractor shall be responsible for the adjustment to grade of all castings within the limits of overlay. Refer to subsection 3.08.

G. Unless otherwise permitted by the Engineer for particular conditions, only machine methods of placing shall be used. The equipment for spreading and finishing shall be mechanical, self powered pavers, capable of spreading and finishing the mixture true to line, grade, width and crown. The mixtures shall be placed and compacted only at such times as to permit proper inspection and checking by the Engineer.

H. After the paving mixture has been properly spread, initial and intermediate compaction shall be obtained by use of steel wheel rollers having a weight of not less than 240 pounds per inch width of tread.

I. Final rolling over the overlay pavement shall be performed by a steel wheel roller weighing not less than 285 pounds per inch width of tread at a mix temperature and time sufficient to allow for final smoothing of the surface and compaction.

J. Immediately after placement of overlay pavement, all joints between the existing and overlay pavement shall be sealed with bitumen and sanded.

END OF SECTION

SECTION 02515

CONCRETE WALKWAYS

PART 1 – GENERAL

1.01. DESCRIPTION

A. The work described in this section includes furnishing and installing sections of concrete walkways, ramps, pads and aprons as shown on the contract documents or as otherwise required in restoration. The work includes furnishing and installing, cast in place concrete walkway sections complete with base material and restoration.

1.02. RELATED WORK

A. SECTION 02200, EARTHWORK

B. SECTION 02930, LOAMING, SEEDING AND SODDING

C. SECTION 02202, SPECIAL TRENCH REFILL

1.03. QUALITY ASSURANCE

A. All concrete walkways shall be subject to the inspection and acceptance from the appropriate State of Connecticut or Town of Windsor authority.

1.04. REFERENCES

The following standards based on the latest edition from a part of the specification as referenced:

A. AMERICAN SOCIETY FOR TESTING AND MATERIALS- ASTM

B. CONN DOT FORM 816 SECTION 9.21CONCRETE SIDEWALKS, SECTION M.03 PORTLAND CEMENT CONCRETE.

C. STANDARD SPECIFICATIONS FROM THE CITY/TOWN HAVING JURISDICTION AND CONTROL OVER THE WORK REQUIRED.

1.05. SUMMITTALS

A. Shall be in accordance with the appropriate State of Connecticut or Town of Windsor requirements.

PART 2 – PRODUCTS

2.01 GENERAL

A. All material shall adhere to the specifications of the State of Connecticut Department of Transportation or Town of Windsor having control over the work required in furnishing and installing concrete walkways.

2.02 TRAPROCK BASE

A. Base material shall be in accordance with Section 02202 when not otherwise stipulated by the State of Connecticut or Town of Windsor authority.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Concrete Walkways and ramps shall be installed as specified in the Standard Specifications of the State of Connecticut or Town of Windsor having control over the walkway.

B. If a section(s) of walkway becomes cracked, broken or otherwise become unfit for pedestrian traffic, due to any operation or work performed by the contractor, the State of Connecticut or Town of Windsor having control shall specify the method used to repair or replace the damaged section.

C. When completed, the walkways shall be kept moist and protected from traffic and weather for at least 3 days.

D. Any statement of Measurement and Payment in the State of Connecticut or Town Standard Specifications shall be disregarded; Measurement and Payment for this Section can be found in Section 01025, “Measurement and Payment”.

END OF SECTION

SECTION 02531

CLEANING AND TELEVISION INSPECTION OF SEWER LINES

PART 1 GENERAL

1.01 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 cleaning and television inspection of the sanitary sewer lines, including the removal and disposal of debris; generating a DVD of the inspection files; and providing the required viewing software, and as directed by the Owner, complete in place and accepted, in accordance with the Drawings and Specifications.

B. Cleaning and television inspection shall be performed on all sewer lines in accordance with this Section as specified herein.

1. The Contractor is required to perform television inspection for all point repairs to verify the existing conditions and the exact location of each point repair prior to construction.

2. The Contractor shall perform all cleaning and television inspection of sewer lines scheduled for CIPP lining in accordance with Section 02766.

1.02 RELATED SECTIONS

A. Maintenance of Flow in Existing Sewers is included in Section 01510.

B. Pressure Testing and Joint Sealing of Sanitary Sewer Building Laterals is included in Section 02568.

C. Point Repairs to Sanitary Sewer Lines is included in Section 02640.

D. Cured-In-Place Pipe is included in Section 02766.

E. Cured-In-Place Pipe Liner for Service Laterals is included in Section 02677.

1.03 SUBMITTALS

A. The Contractor shall submit literature of the viewing software he proposes to use and it’s compatibility to the Owner’s DVD system.

B. A copy of the user defect codes as suggested in these specifications.

C. Literature on the television and cleaning and recording equipment showing compliance with these specifications.

1.04 DEFINITIONS

A. Normal cleaning – cleaning accomplished using water jets (pressure shall not exceed 1200 psi) to scour and remove debris, grease, light roots, etc. from pipe and manhole in 1 to 3 complete passes of the nozzle. This Work shall be classified as light hydraulic cleaning that shall be performed in conjunction with the repair, rehabilitation, pre-construction and post-construction inspections, etc. of existing or new sewer pipe as specified herein.

B. Heavy Hydraulic Cleaning and root removal – cleaning accomplished using water jets (pressure shall not exceed 1200 psi), or other mechanical means, to scour and remove debris, mineral deposits, removal of roots larger than fine roots (as defined by PACP), hardened grease and intruding sealing ring material using cutting device, etc. from pipe and manhole in 4 or more complete passes of the nozzle. This Work shall be classified as heavy hydraulic cleaning and shall be paid under Bid Items 2D.

1.05 SEWER CLEANING EQUIPMENT

A. General

1. Cleaning shall be accomplished with mechanical and/or hydraulic equipment. Mechanical equipment shall consist of rodding and bucketing machines with buckets, brushes and scrapers, and root cutters. Hydraulic equipment shall consist of high velocity type or hydraulically propelled equipment. All equipment, machinery, trucks and vehicles used in the performance of cleaning and televising of sanitary sewer lines shall, at all times, be in proper operating condition. If equipment and other applicable machinery used in the cleaning and televising Work are not in good Working condition, as practiced by good sewer construction practices and the Contractor refuses to comply with these standards, the Owner may request the Contractor to fulfill the contract requirements with another suitable subcontractor and within the time frame allotted.

B. Hydraulically Propelled Cleaning Equipment

1. The equipment shall be equal diameter as the pipe being cleaned and provide a flexible scraper around the outer periphery to ensure total cleaning.

C. High velocity Hydro-Cleaning Equipment

1. All high velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size lines designated to be cleaned. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel. All controls shall be located so that the equipment can be operated above ground. **The maximum pressure used to clean the sewers shall be at a pressure (1,200 psi) so as not to cause air pressure to damage adjacent building plumbing.** If higher pressures are required to perform heavy cleaning, the Contractor is required to coordinate his activity with the Owner or his representative before proceeding.

D. Mechanical Cleaning Equipment

1. Mechanical equipment shall consist of rodding and bucketing machines with buckets, brushes and scrappers and root cutters.

E. Disposal

1. The removal and disposal of all debris from cleaning operations shall be the responsibility of the Contractor, including all testing and obtaining permits as required for disposal. The Contractor will be required to pay all additional fees, registration fees for trucks, and all testing that may also be required by the Town of Windsor. All billing from the Town of Windsor shall be separate from the Owner billing. At the pre-construction conference, the Contractor will be expected to inform the Owner as to the disposal arrangements for this contract.

1.06 TELEVISION INSPECTION EQUIPMENT

A. Mobile Unit

1. The television system shall be a self-contained system complete with winches (power and mechanical), cable, closed circuit television camera, monitor, super VHS video tape and MPEG 1 Hardware Compressor, camera, suitable measuring device to accurately determine the position of the camera in the line being televised at all times, and all necessary equipment for the successful completion of television inspection and space for at least one Owner inspector.

B. Video Equipment

1. The color television camera used for the inspection shall be a radial view camera (360- degree optical lens) specifically designed and constructed for such inspection. The camera must be solid-state color and have

remote control of the 360-degree rotational lens. Cameras incorporating mirrors for viewing sides or cameras using exposed rotating heads are not acceptable. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions. The camera, television monitor and other components of the video system shall be capable of producing a minimum 460-line resolution video picture. Picture quality and definition shall be to the satisfaction of the Owner and if unsatisfactory, equipment shall be removed and no payment made for unsatisfactory inspection.

1.07 OWNER WATER USAGE PROCEDURES

A. Refer to Section 01046, Paragraph 1.07 for Owner Water Usage Procedures.

PART 2 PRODUCTS

2.01 DATA ACQUISITION AND MANAGEMENT

A. General

1. The Contractor shall submit to the Owner, at the completion of the project, MPEG files of the entire lengths of each pipeline inspected using closed circuit television. In addition, a complete database of the inspection information noting defects, infiltration/inflow quantification, roots, footages, subsystem and manhole segment and all other pertinent customary information, and appropriate viewing software shall be submitted in DVD or hard drive format. The database shall be in a format common to the industry that can be read using Microsoft Access or other software as directed by the Owner. Each DVD shall be labeled with the appropriate identification of its contents. The label shall correspond to a schedule of every sewer reach contained on the DVD. The labeling information for the DVD shall be in a format deemed acceptable by the Owner.

2. The digital video files shall be indexed to software capable of performing multiple summaries, queries, filtering, and analysis. The software shall also have the capability of capturing, digitizing, storing, and correlating single frames of video images, real time live video recording, the capability of collecting, storing, filtering, and presenting pipeline inspection data for computer display and printed report generation. Acceptable complimentary software packages are as provided by Severn Trent Services, Cues, Cobra Technologies WinCam or approved equal.

3. The viewing software package shall be compatible with a 32 bit Windows NT/XP operating system with data entry accomplished via a mouse or keyboard. It shall be capable of printing pipeline inspection reports and reports with captured images of defects or other related significant visual

information on a standard inkjet color printer. The software shall also have the capability of being linked with graphical software such as those used for Geographical Information Systems.

4. The manufacturer of the viewer software package shall have full in-house customer support.

B. Features

1. Data Base

a. Inspection files shall be exportable into other databases and other computers. Export file header format information shall be provided to allow the export file to be customized with applicable header information into unique user applications or software. A standard exchange format shall be used. DXF shall be sewer.dat as published by WRC (Water Research Council).

b. User selectable defect codes shall include standard defect codes, as suggested by the Pipeline Assessment and Certification Program (PACP) as developed by the National Association of Sewer Service Companies (NASSCO). There shall also be user selectable defect severity methods and category codes. Codes shall be approved by Owner prior to commencement of any Work. Pre-televising Work used prior to construction to determine the extent of repair required does not have to meet the PACP standard for codes.

c. All graphic and tabular reports shall be available in color to match the defect severity and/or category codes. There shall be graphic and tabular reports, including a graphic of each pipe showing all observation points and pertinent data in an intuitive format. The system shall have the capability of customizing report formats using a search and sort function to sort by job, contract, pipe type, location, size, defect severity, etc.. to meet local area requirements and regulations as necessary.

2. Video Capture

a. Full length live video and audio files shall be captured for each pipe inspected. The files shall be stored in industry standard MPEG (Moving Pictures Expert Group) format and can be transferable by DVD to an external personal computer that supports MPEG 1 playback or played on a standalone DVD player. The minimum MPEG video shall be defined as ISO-MPEG Level 1 (not less than 1.5 Mbytes/sec). It may be necessary that conditions may require

increased resolution as pipe sizes are increased in order to provide a quality video.

b. The video recording shall be free of electrical interference and shall produce a clear and stable image. The audio recording shall be sufficiently free of background and electrical noise as to produce an oral report that is clear and discernable. The MPEG compression hardware must be capable of pausing the image during an inspection.

c. The MPEG files and inspection data shall be linked by elapsed time to allow instant access to any defect during playback of video file.

d. The inspection header file shall include segment information (start and ending manholes, date, time, client, address, etc.). An index field shall be provided for each pipe segment in the database to the corresponding video file. The Primary Index Field (PLR in WRc) shall be used to name the video file with an extension of .mpg. No proprietary extension file names are permitted.

C. DVD Player Viewing Software

1. A DVD player viewing software package shall be provided with the database to facilitate playback of each pipe segment when requested from the database software. It is understood that the PC or laptop running the system will need to be capable of playing DVD's using other (not supplied) software and hardware before attempting to use the supplied player software viewing package. This player software package will support searches (fast forward, fast reverse at 3 speeds) and still image capture.

D. Image Capture

1. The viewing system shall have the ability to create still pictures from user selected frames of video recordings. Selected digitized picture images shall be stored and the picture files shall be exportable to Industry Standard Formats to include JPEG, BMP and TIFF formats.

2. The selected digitized picture images shall be transferable to, and usable with, an external personal computer that utilizes standard viewers and printers.

3. Digitized picture files shall be linked to pipe segment observations within the database software. The system shall be capable of linking up to 2 digitized picture files for each observation.

4. It is understood that Image capture capability is hardware dependent and not all graphics boards support image capture from DVD playback. Consequently, it will be the Owner's responsibility to resolve hardware incompatibilities, if necessary, using suggestions of proven compatible hardware provided by the Contractor.

5. The MPEG 1 files shall be able to be played on a Windows Media Player.

6. All MPEG files shall contain both video and audio content.

PART 3 EXECUTION

3.01 GENERAL

A. The Contractor shall include the complete removal and disposal of all dirt, roots, gravel and other debris and obstructions from the sewers as specified in Paragraph 3.04. Special precautions must be exercised during the cleaning operation to assure complete removal of roots from the joint area of pipes. All joints shall be fully exposed to allow proper television inspection.

B. Televising of sanitary sewer lines shall be defined as color television inspection by the insertion of a closed circuit television camera into a sanitary sewer line for the purpose of visual inspection of the interior portion of the sewer line. It shall be the Contractor's responsibility to provide for sewer flow control and the televising and recording of visual observations of the sewer line.

C. The sanitary sewer shall be cleaned prior to television inspection.

D. Flows up to 20% of the pipe diameter shall be allowed during televising. Flows in excess will need to be reduced to less than 20% of the pipe diameter before televising will be allowed to commence. The Contractor may be requested to televise during the evening hours if flows cannot be by-passed.

E. The Contractor shall generate MPEG 1 files in the field using a hardware video compressor. Alternatively the Contractor may post process the video collected on **super VHS format** and transfer the video tapes to MPEG 1 files. However, the video files must be linked to the inspection data to permit random access to the video files using the inspection data. The Contractor will be allowed to use VHS tapes during the working period but must provide the Owner with television records on DVD or hard drive with applicable viewing software and database at completion of the project.

F. Disposal of materials: All materials collected during the cleaning operation shall be disposed of in a proper manner by the Contractor that meets all local,

state and federal regulations. All costs incurred for removing, hauling and disposal of debris shall be included in the appropriate Bid item.

G. Any hazardous waste encountered during this project will be considered as a changed condition. It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the installation process and it cannot be removed by conventional sewer cleaning equipment, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Owners representative prior to the commencement of the Work and shall be considered as a separate pay item. If the Owner elects to direct a separate Contractor, currently under contract with the Owner, to perform the point repair, the Contractor shall coordinate his efforts with said Owner Contractor.

H. Cleaning of sewer lines: It shall be the responsibility of the Contractor to remove all internal debris out of the sewer line. The Contractor will be responsible for the cleaning of the existing sewer to be lined. The necessary cleaning will be accomplished by the Contractor or a Contractor approved by the Engineer. The cleaning effort must be coordinated with the planned lining operation. Any debris collected during the cleaning operation will be disposed of in a proper manner. Any costs incurred for disposal shall be borne by the Contractor. Heavy hydraulic cleaning of the sewer line shall be performed no more than three weeks prior to the inversion. Light hydraulic cleaning of the sewer line prior to the inversion shall be performed the same day as the inversion.

3.02 PUBLIC NOTIFICATION

A. A public notification program shall be implemented, and shall, as a minimum, require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, and when the sewer will be off-line. The Contractor shall also provide the following:

1. Written notice to be delivered to each home or business describing the work, schedule, how it affects them, and a local telephone number of the Contractor that they can call to discuss the project or any problems, which could arise. This notice must be approved for use by the Owner.

2. All notices shall be prepared and distributed by the Contractor. One notice will be required prior to cleaning & CCTV inspection, this notice shall be distributed 24-48 hours in advance of the Work. In addition, a post construction notice is required within 24 hours of completion of cleaning &

CCTV inspection Work. Notices shall be prepared and handed out to all residents and businesses affected by CIPP Work. All notices shall be approved by the Owner prior to distribution. Example notices will be prepared and given to the Contractor by the Owner. Contractor shall copy and distribute notices at no additional cost to the Owner.

3. Personal contact with any home or business that cannot be reconnected within the time stated in the written notice.

4. The Contractor must designate an ombudsman to handle complaints or questions from customers regarding the work. The ombudsman shall be equipped with a cellular phone and be on call 24 hours per day. Owner will refer all customer calls concerning the work to the Ombudsman, who shall have the authority to rectify problems promptly and completely. Should the Ombudsman be away from the project, a designated replacement shall be appointed and equipped to handle Ombudsman duties and the Owner notified of the replacement. This person shall be all the necessary personal skills in dealing with the general public. The Owner reserves the right to alter notification procedures.

3.03 WORKMANSHIP

A. The designated sanitary sewer sections shall be cleaned using mechanically powered, hydraulically propelled or high velocity sewer cleaning equipment, as specified. Selection of the equipment used shall be based on the conditions of the lines at the time the Work commences. The equipment and the methods selected shall be satisfactory to the Owner's representative. The equipment selected for cleaning shall be capable of removing dirt, rocks, sand, and other deleterious materials and obstructions from the sewer lines and manholes. Where possible, sewer lines should be cleaned from the downstream manhole. If cleaning of an entire section cannot be successfully performed from the manhole, the equipment shall be re-setup on the other end and cleaning again attempted. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire section, the Engineer may assume that a major blockage exists and the cleaning effort is to be abandoned.

B. All sludge, dirt, sand, rocks, grease and other solid or semi-solid material resulting from the cleaning operation must be collected and removed at the downstream manhole of the section being cleaned. Under no circumstances shall debris be allowed to flow into the downstream section. Refer to paragraphs 3.01.F, 3.01.G and 3.01.H above.

C. During all sewer cleaning operations, satisfactory precautions shall be taken to protect the sewer line from damage that might be inflicted by the improper use of cleaning equipment. Any damage occurring due to the Contractor's

operations, as determined by the Owner, shall be repaired to the satisfaction of and at the expense of the Contractor.

D. Acceptance of this portion of the Work shall be made upon the successful completion of the television inspection and shall be to the satisfaction of the Owner. ***Where sags in the pipe are encountered to greater than 25% of the pipe size the pipe shall be re-cleaned, dewatered using a high velocity jet and re-televised.***

E. Cleaning shall be accomplished no more than 24 hours prior to TV inspection with mechanical and/or hydraulic equipment except where Asbestos Cement Pipe is encountered, in which instance mechanical cleaning will not be allowed unless the Owner so directs. Mechanical equipment shall consist of rodding and bucketing machines with buckets, brushes, scrapers, and root cutters. Hydraulic equipment shall consist of high velocity type or hydraulically propelled equipment. Selection of equipment used shall be based on the condition of the line at the time of the Work commencement and shall be capable of removing dirt, grease, rocks, sand and other debris, materials and obstructions.

F. Any damage resulting from the Contractor's operation, as determined by the Owner, shall be repaired or rectified to the satisfaction of, and at no additional cost to the Owner.

3.04 TELEVISION INSPECTION

A. The camera shall be moved through the line in either direction at a uniform rate to monitor for defects in the sanitary sewer line where water infiltrates, stopping when necessary to insure proper documentation of the sewer's condition, but in no case will the television camera be pulled at a speed greater than 30 feet per minute. The operator shall determine whether each flow source is attributable to a service in use or infiltration with an estimate made on the audio portion of the tape. Whenever possible, the camera shall be stopped at each joint for 3-5 seconds so viewing for joint infiltration may be performed. ***The television camera shall also be stopped at each lateral connection and at the beginning, terminating and any subsequent encountered manholes and with the use of the pan and tilt feature to view each structure for condition status.*** The recording speed shall be no greater than "SP" or 120 minutes using a T-120 tape cartridge if utilizing taping with transference to DVD at completion of the project. Manual winches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. If, during the inspection operation the television camera will not pass through the entire sewer section, the Contractor shall reset up his/her equipment in a manner so that the inspection can be performed from the opposite end. If again, the camera fails to pass

through the entire sewer section, the inspection shall be considered complete and no additional inspection Work will be required, as directed by the Owner.

B. Measurement for locations of defects shall be above ground by means of a meter device. Marking on cable, or the like, which would require interpolation for depth of manhole, will not be allowed. Measurement meters will be accurate to two tenths (0.2) of a foot over the length of the section being inspected. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape or other suitable device.

C. Documentation of television inspection results shall be as follows:

1. Television Inspection Logs: Printed location records shall be kept by the Contractor and will contain the video tape/DVD ID and MPEG file name, Owner's name, date TV inspection is performed, performing Contractor's name, street name, drainage basin and manhole numbers for the segment televised, pipe shape, pipe size denoted be height and width, pipe material, joint spacing length, viewing direction, total televised length, measured flow in gallons per day (gpd), video start and finish index, and observations with clock reference. ***Each infiltration source noted shall be quantified in gpm.*** In addition, other points of significance, such as locations of building laterals, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion, open joints, lateral and longitudinal cracks and other discernable features will be recorded and a copy of such records will be supplied to the Owner.

2. Photographs: Standard size (3-1/2 x 5) photographs of the television monitor noting problem areas shall be taken by the Contractor upon request of the Owner's representative.

3. Video Recordings: The purpose of video recordings shall be to supply a visual and audio record of problem areas of the lines that may be replayed and viewed. Video recording playback shall be at the same speed that it was recorded. Following the completion of TV inspection, the Contractor shall provide the Owner with TV inspection videos with recommendations, for approval by the Owner.

4. All televising of sewer lines shall be done in the presence of the Owner or his/her duly authorized representative.

5. Naming Convention: The convention for text and mpeg files shall be the upstream manhole designation downstream manhole designation (U or D – upstream or downstream viewing direction date). The manhole designation unless directed otherwise shall be the unique identifier code established by the Owner.

END OF SECTION

SECTION 02550

WORK IN STATE HIGHWAYS AND RIGHT-OF-WAYS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish all labor, equipment, materials and all incidentals required to install the cured-in-place lining and manhole rehabilitations in State Highways and Right of Ways as shown on the Drawings.

B. The Contractor shall obtain and abide by the requirements of a State Highway Permit, including insurance requirements, as necessary.

C. Contractor shall obtain all necessary permits, arrange all inspections required by the state and pay all charges. The Contractor shall conform to all applicable State Highway Department rules and regulations.

D. Traffic flow shall be maintained throughout construction.

E. Contractor shall take all means necessary to prevent accidents. Sufficient flagmen, barricades, lights, signs and all other precautions necessary shall be furnished to provide safe conditions, as required.

F. If street pavement is damaged or removed during construction of the Work, Contractor shall replace the street pavement and base with pavement of similar type and equal thickness to the pavement which was disturbed. This pavement and base shall be constructed in complete accordance with the requirements of the State Highway Department.

1.02 OPERATIONS IN STATE HIGHWAYS

A. For coordination of Work on or near State Highways, contact the State of Connecticut Department of Transportation, District 1 Engineer, 1107 Cromwell Avenue, Rocky Hill, Connecticut 06067, Telephone 860-258-4601.

1.03 REFERENCE STANDARDS

A. Except as otherwise specified herein, the current Standard Specifications for Roads, Bridges and Incidental Construction, Form 816, including all addenda, issued by the State of Connecticut, Department of Transportation (CTDOT), shall apply to materials and workmanship required for the work of this Section.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 METHODS

A. At least 45 days before doing any Work in any State highway, the Contractor shall notify said Owner and meet all requirements and conditions necessary.

B. In addition to other requirements of the Owner, the Contractor shall comply with the following:

1. At all times the state highways shall be open to two-way traffic unless approval to close a lane is obtained from the above mentioned District Office. Whenever deemed necessary by the Engineer, uniformed police shall be attendance. Police shall be provided in accordance with Section 01576.

2. The Contractor shall make arrangements to the satisfaction of the Engineer such that weekend, holiday, or night-time repairs can be made immediately when and if necessary while the Work is in progress.

3. The Contractor shall not store any materials on the highway that would interfere with the flow of traffic.

4. No Work shall be done during freezing weather unless prior approval is obtained from the Owner and Engineer.

5. The Contractor shall make every effort to accomplish the Work as quickly and as efficiently as possible.

6. Steel plates shall be readily available at the site for use if needed.

7. No Work shall be done within the state highway between November 15 and April 1 and on May 18, 2013.

8. The Contractor shall replace all pavement markings which have been disturbed or paved over.

9. The Contractor shall replace any traffic loops, signage and/or anything else which has been disturbed or paved over.

END OF SECTION

SECTION 02568

PRESSURE TESTING AND JOINT SEALING OF SANITARY SEWER BUILDING LATERALS

PART 1 GENERAL

1.01 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 of sanitary sewer 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. Building laterals to be pressure tested and sealed shall be televised before and after sealing with results kept in a logbook. Each building lateral designated for sealing, shall be sealed a minimum of six (6) feet up the lateral.

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.

C. Air testing on laterals to determine requirement for sealing will not be required in this Contract. Video inspection of laterals will be used to determine which laterals require sealing. Final determination will be made by the Engineer, or Owner Representative. While the Contractor is not required to perform Air Tests to determine lateral sealing, the Owner reserves the right to implement post-construction lateral sealing as it sees fit.

1.02 RELATED SECTIONS

A. Maintenance of Flow in Existing Sewers is included in Section 01510.

B. Cleaning and Television Inspection of Sewers Lines is included Section 02531.

C. Removal of Protruding Taps is included in Section 02654.

D. Cured-in-Place Pipe Liner for Service Laterals is included in Section 02677.

E. Cured-in-Place Pipe (CIPP) for Sewer Mains is included in Section 02766.

F. Manhole Monolithic Lining System is included in Section 02768.

1.03 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.

1.04 DESIGN CRITERIA

A. The Owner intends to provide full-time resident inspection during sealing operations. Therefore, 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 T.V. grouting rigs.

PART 2 PRODUCTS

2.01 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 Section 02531 - Cleaning and Television Inspection of Sewer Lines.

2.02 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.

2.03 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 laterals.

2.04 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 - ⅛" open gap from dead tight joint.

2) Broken Bell - Approximately 1/3 of the bell is broken away.

3) Slot - 3" x ⅛" 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 Owner'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 ½ inch to ¾ 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 Owner, 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 Owner.

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 Manufacture.

PART 3 EXECUTION

3.01 CLEANING AND TELEVISION INSPECTION OF SEWERS

A. All lines that are scheduled for grouting shall be cleaned. Cleaning shall include the complete removal of all dirt, rocks, roots, gravel and other debris and obstructions from the sewers. Cleaning and Television Inspection shall be performance in accordance with Section 02531 - Cleaning and Television Inspection of Sanitary Sewers Lines.

3.02 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. Joints with visible infiltration shall be sealed immediately.

B. Air testing of all house lateral connections shall be accomplished by isolating the area to be tested with a grouting packer and a lateral sealing inversion tube, and applying positive pressure into the isolated void area up the lateral for at least six (6) feet. A sensing unit shall be used for continuous monitoring of the void pressure. This sensing unit shall be located within the void and accurately (within 1/10 of a psig) transmit the pressure readout to the control panel.

1. The test procedure shall consist of applying air pressure into each isolated void area. To isolate a void, the lateral sealing packer is positioned straddling the lateral. The operator inflates the inversion tube up the lateral and then inflates the packer ends to isolate the lateral. A pressure of 5-psi air pressure is applied into the isolated void area.

2. The test is considered positive if the time for a drop of pressure from 5-psi to 3-psi exceeds 15 seconds. Otherwise, the lateral is considered to have failed the air test and shall be sealed. After completing the air test for each individual lateral, the lateral packer should be deflated, with the VOID pressure meter continuing to display VOID pressure. If the VOID pressure does not drop to approximately zero, the equipment is adjusted to provide a zero VOID pressure reading at the monitor.

3.03 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. Lateral sealing is performed if video inspection shows visible leakage; however the Owner reserves the right to seal additional laterals as it sees fit. Final field determination of lateral sealing will be made by the Engineer. The lateral packer should remain in position, maintaining the isolated VOID. Chemical grout sealant is pressure injected through the lateral packer into the annular space between the inversion tube and the lateral pipe. Under pressure, the grout material is then forced out into the soil through leaking joints and pipe defects. A minimum of six (6) feet of the building lateral from the main sewer up into the lateral shall be sealed.

3.04 JOINT SEALING VERIFICATION

A. Lateral 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 lateral is sealed or it is determined that the grout consumption is too high and may result in the blockage of the lateral pipe. The final determination to stop subsequent attempts to seal a lateral will be made by the Owner.

3.05 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 Owner, 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.

3.06 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 Owner's Representative and at no cost to the Owner.

3. Video Tape Recordings: The purpose of tape 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 tape 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. Videotapes 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 videotapes shall become the property of the Owner. All tapes shall be compatible with VHS 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 Owner. 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 Owner for review and approval.

D. The complete procedure for sealing laterals should be videotaped during the air testing and sealing operation. The videotapes are to be submitted to the Owner for review and permanent record.

3.07 INSPECTION

A. The Owner intends to provide full-time resident inspection of all cleaning of sewers, television inspection, pressure testing and sealing operations. Therefore, work shall only be performed in the presence of a duly authorized representative of the Owner. This includes blending the various chemicals (set-up and tear down operations need not be performed in the presence of the Owner).

B. The Owner may direct the Contractor to alter testing pressure gel time, and/or pumping rate, based on actual conditions encountered during sealing.

C. The Owner 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 Owner 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 Owner 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 Owner and the Contractor's superintendent.

E. Video Inspection of each lateral grouted will be required immediately following the process to determine cleanliness before moving on to the next location.

3.08 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 building laterals. The building 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 laterals as previously specified. Any laterals failing the retest shall be resealed. If the failure rate of the retested laterals is less than 5% of the 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 laterals exceeds 5% of the laterals retested, an additional retest area of equivalent size shall be selected and all previously sealed laterals shall be retested. This additional testing and sealing, if necessary, will continue until a failure rate of less than 5% of the total laterals retested is met. If a lateral fails the initial retest, no additional payment shall be made.

END OF SECTION

THE METROPOLITAN DISTRICT

SECTION 02575

PAVEMENT MARKINGS

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install pavement markings as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Temporary and permanent paved surface restoration is included in Section 02510.

1.03 SUBMITTALS

A. See Section 01300.

1.04 REFERENCE STANDARDS

A. State of Connecticut Department of Transportation, Standard Specifications for Roads, Bridges, and Incidental Construction Form 816, 2004, and all supplements (CTDOT Form 816).

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Temporary Painted Pavement Markings, Painted Legend, Arrows and Markings shall be of the type and size as shown on the Drawings and shall be as specified in accordance with CTDOT Form 816 Section 12.09.02.

~~B. Permanent Painted Pavement Markings, Symbols, and Legends shall be of the type and size as shown on the Drawings and shall be as specified in accordance with CTDOT Form 816 Section 12.10.02.~~

PART 3 - EXECUTION

3.01 PAVEMENT MARKINGS

A. Temporary Painted Pavement Markings, and Legend, Arrows and Markings shall be installed in accordance with CTDOT Form 816 Section 12.09.03.

~~B. Permanent Pavement Markings, and Pavement Markings, Symbols, and Legends shall be installed in accordance with CTDOT Form 816 Section 12.10.03.~~

END OF SECTION

SECTION 02605

MANHOLES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this section includes furnishing and installing brick and/or concrete block built-in-place or precast concrete manholes at the locations and to the lines, grades, dimensions, and details shown on the Contract Drawings, complete as shown, specified and directed.

B. The work includes, all as shown, specified and directed, transporting materials, clearing, excavation, disposing of unused excavated materials, connecting storm or sewer lateral and drain pipes to manholes, furnishing and installing all components of manholes, including pre-cast sections and brick or block masonry, placing concrete, constructing inverts and water tables, refilling excavations, furnishing additional material for refilling, miscellaneous grading, bracing, diversion and/or maintenance of sanitary, storm or combined sewage flows, pumping, furnishing and installing bedding material, geotextile fabric, concrete base, frames and covers, manhole drop pipes, manhole steps, waterproofing, temporary and permanent unpaved surface restoration, temporary pavement restoration, and all incidental work, except as otherwise herein provided for.

1.02 RELATED WORK

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES

B. SECTION 01570, TRAFFIC REGULATIONS AND TRAFFIC CONTROL

C. SECTION 02011, TEST PITS

D. SECTION 02053, REMOVAL AND DISPOSAL OF EXISTING SEWER, MANHOLES AND APPURTENANCES

E. SECTION 02140, DEWATERING AND DRAINAGE

F. SECTION 02160, EXCAVATION SUPPORT SYSTEMS

G. SECTION 02200, EARTHWORK

H. SECTION 02202, SPECIAL TRENCH REFILL

I. SECTION 02510, TEMPORARY AND PERMANENT PAVED SURFACE RESTORATION

J. SECTION 03302, MISCELLANEOUS CONCRETE

K. THE METROPOLITAN DISTRICT – SANITARY SEWER AND STORM DRAIN CONNECTION MANUAL

1.03 QUALITY ASSURANCE

A. All materials shall be inspected and tested at the place of manufacture as required by the standard specifications to which the material is manufactured.

B. All materials shall be subject to inspection by the Engineer after delivery to the job site and may also be subject to inspection at the place of manufacture by a representative of the Owner.

C. In addition, the Owner reserves the right to have any or all materials inspected and/or tested by an independent service at either the manufacturer's plant or elsewhere. Such inspection and/or tests shall be at the Owner's expense.

D. Precast concrete manhole sections shall not be delivered to the work site until they have aged at least seven (7) days.

1.04 REFERENCES

The following standards, based on the latest edition, form a part of this specification as referenced:

A. ASTM A48 - STANDARD SPECIFICATION FOR GRAY IRON CASTINGS.

B. ASTM A276 - STANDARD SPECIFICATION FOR STAINLESS AND HEAT-RESISTING STEEL BARS AND SHAPES.

C. ASTM A746 - STANDARD SPECIFICATION FOR DUCTILE IRON GRAVITY SEWER PIPE.

D. ASTM A615/A615M - STANDARD SPECIFICATION FOR DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT.

E. ASTM C32 - STANDARD SPECIFICATION FOR SEWER AND MANHOLE BRICK (MADE FROM CLAY OR SHALE).

F. ASTM C425 - STANDARD SPECIFICATION FOR COMPRESSION JOINTS FOR VITRIFIED CLAY PIPE AND FITTINGS.

G. ASTM C443 - STANDARD SPECIFICATION FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE, USING RUBBER GASKETS.

H. ASTM C361 - STANDARD SPECIFICATION FOR REINFORCED CONCRETE LOW-HEAD PRESSURE PIPE.

I. ASTM C478 - STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.

J. ASTM D3034 - STANDARD SPECIFICATION FOR TYPE PSM POLY (VINYL CHLORIDE) (PVC) SEWER PIPE AND FITTINGS.

K. ASTM D4101 - STANDARD SPECIFICATION FOR PROPYLENE PLASTIC INJECTION AND EXTRUSION MATERIALS.

L. ARTICLE M.08.02-1, CONN DOT FORM 816- BRICK FOR CATCH BASINS, MANHOLES OR DROP INLETS.

M. ARTICLE M.08.02-3, CONN DOT FORM 816- MASONRY CONCRETE UNITS FOR CATCH BASINS, MANHOLES OR DROP UNITS.

N. ARTICLE M.11.04, CONN DOT FORM 816 - MORTAR.

O. THE METROPOLITAN DISTRICT SEWER STANDARDS PLANS, SERIAL NO. 16902, DRAWER 62, AUGUST 1990.

1.05 SUBMITTALS

A. In accord with the General Conditions and Section 01300, six (6) copies of the manufacturer’s data sheet(s) shall be submitted for approval.

The data sheets shall include the following:

1. Name and address of supplier and manufacturer for all materials (precast manhole sections, frame and cover, manhole steps, masonry units, brick, cement, etc.)

2. Manhole dimensions and size and location of reinforcement and openings.

3. Details of joints between sections and between manhole and entering pipe.

4. Details and locations of openings, lifting holes, inserts, steps, etc.

5. Location plan or list showing the location of each manhole and such other information as needed for installation.

6. A certified statement that inspection and all of the specified tests have been made and met shall also be submitted.

PART 2 - PRODUCT

2.01 PRECAST CONCRETE MANHOLE SECTIONS

A. Precast concrete manhole sections and appurtenances shall conform to ASTM C478 with the following exceptions and additional requirements:

1. The wall sections shall be not less than 5 inches thick for 48-inch I.D. manholes and 6 inches for 60-inch I.D. manholes.

2. Portland cement concrete with a minimum 28-day compressive strength of 4,000 psi shall be used for 48-inch I.D. and 60-inch I.D. manholes.

3. Joints between precast manhole sections shall be sealed with a butyl rubber gasket material as manufactured by Kent Seal, ConSeal or equal in such a manner as to make the manhole watertight.

4. Joints between the manhole section and an entering (existing) pipe shall consist of a premolded elastomeric sleeve cast into the manhole base or wall section to provide a watertight joint having a maximum omnidirectional deflection capability of 10 degrees. The sleeve shall be the Lock Joint Flexible Manhole Sleeve as manufactured by Chardon Rubber Co., Chardon, OH or approved equal.

5. The tops of the base sections shall be suitably shaped by means of accurate bell-ring forms to receive the barrel sections. All holes for pipes shall be cast in the base sections so that there is a clear distance of four inches minimum between the inside bottom of the base section and the bottom of the pipe.

6. Openings for pipe and materials to be embedded in the wall of the base shall be cast in the base at the required locations during the manufacture of the base.

7. Base pads shall be pre-cast with extended bases.

8. Cone sections shall be of the eccentric type and be manufactured in accord with the standards for wall and base sections.

9. Flat top slabs shall have a thickness and reinforcement in compliance with ASTM C478.

10. Manhole sections shall contain manhole steps so as to form a continuous

ladder with a distance of twelve inches (12”) between steps.

11. No more than two lift holes shall be cast or drilled in each section.

12. Sections shall be cured by subjecting them to thoroughly saturated steam at a temperature between 100 and 130 degrees F. for a period of not less than 12 hours or, when necessary, for such additional time as may be needed to enable the sections to meet the strength requirements.

13. Shipment of precast manhole sections to the construction site shall not be allowed until the precast sections have aged at least seven days.

14. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the inside of each manhole section.

15. All precast units shall be designated for AASHTO H-20 traffic loading.

2.02 BRICK

A. Brick shall conform to the requirements of Article M.08.02-1, CONN DOT FORM 816.

2.03 CONCRETE MASONRY UNITS

A. Concrete masonry units shall conform to the requirements of Article M.08.02-3, CONN DOT FORM 816.

2.04 MORTAR

A. Mortar shall conform to the requirements of Article M.11.04, CONN DOT FORM 816.

2.05 MANHOLE FRAMES AND COVERS

A. The manhole frames and covers shall conform to the Metropolitan District approved materials for sanitary sewer and storm sewer installations. To fit existing manholes, an alternate frame shall be East Jordan Iron Works (EJ) no. 1248Z2 or approved equal.

B. Castings shall conform to ASTM Specifications A-48, Class 30 and shall be thoroughly cleaned, heated, and dipped in approved black asphaltum paint.

C. All covers shall be appropriately marked “SEWER” or "STORM DRAIN" in a manner similar to the sewer manhole cover shown on District standard drawings, Serial No. 16902, File 62-209. “Special” frames and covers where ordered by the Engineer shall be as shown on District Standard Drawings Serial No. 16902, File

62-210.

D. In order to prevent covers from rocking or ratting under traffic and to insure proper fit and interchangeability between different frames and covers, the lower surface of the cover and the corresponding upper surface of the frame shall be machine-finished in a lathe to provide a round, smooth, flat contact with the dimensions and clearances called for on the District's Standard Drawings.

E. All manufactured manhole frames and covers submitted for District approval and use shall be clearly and conspicuously marked on the top surface of each in English letters designating the manufacturing country of origin. Such marking shall be made either by means of die stamping, cast-in molding, etching or engraving. No other type of marking is acceptable.

F. ~~Frames and covers which are to have a bolted locking device are so indicated on the Contract Drawings and shall be as shown on District standard drawing Serial No. 16902, File 62-212. Each cover shall be drilled and counter bored to a depth of ½-inch in two places 180º apart to accommodate a ½-inch diameter Type 304 stainless steel socket head cap screw. Each frame shall be drilled and tapped to accept the cap screw. The socket head cap screw shall be 1½-inches long having 13 threads to the inch. Each frame and cover shall be marked for identification to insure that the proper cover is installed with its drilled and tapped frame.~~

G. Manhole frames and covers shall be suitable for highway traffic, including H20 wheel loads.

2.06 MANHOLE STEPS

A. Manhole steps, as shown on District Standard Drawings, shall be built into manhole walls and elsewhere as indicated, and shall be aligned to form a continuous ladder with rungs equally spaced vertically at a maximum distance of 12-inches apart. The top step shall be between 12-inches and 16-inches below the manhole cover. Steps shall be embedded in the manhole wall a minimum distance of 3-inches and rungs or cleats shall project a minimum clear distance of 5-inches from the interior manhole wall, measured from the point of embedment. Additional steps shall be furnished and set as shown on the plans or where ordered by the Engineer.

B. Aluminum manhole steps shall be forged aluminum safety rung, alloy 6061-T6. That portion of the manhole step encased in concrete or masonry shall be coated with either bitumastic or zinc chromate paints.

C. Plastic manhole steps shall be in conformance with ASTM C478 and shall be of copolymer polypropylene conforming to ASTM D4101 for Type 11 propylene copolymers. The copolymer polypropylene compound shall encase a ½-inch

Grade 60 steel reinforcing rod conforming to ASTM A615. Plastic manhole steps shall resist pull out forces over 1,500 lbs.

2.07 PIPE STUBS IN MANHOLES

A. The stubs shall be short pieces cut from the bell end of the pipe. The stubs shall be set the required line and elevation and encased in the manhole masonry as shown on the Contract Drawings or as directed by the Engineer. Stubs shall not extend beyond the manhole base slab more than 2'-0".

B. Reinforced concrete stubs shall be short lengths of reinforced concrete pipe with bulkheads.

C. Polyvinyl chloride stubs shall be short pieces cut from the bell ends of polyvinyl chloride pipe and shall have polyvinyl chloride caps with pre-molded gasket joints.

2.08 INSIDE DROP

A. Drop pipe fittings for inside drop manholes (Type IV) shall be ASTM D3034 SDR 35 (PVC) polyvinyl chloride pipe and fittings.

B. Anchor straps and fasteners for drop pipe and fittings shall be 1/8" x 1½" Type 304 stainless steel strip cut to suit with suitable stainless steel fasteners.

2.09 GEOTEXTILE FABRIC

A. Geotextile fabric shall be non-woven geotextiles, Mirafi 140N, Mirafi 1100 N or approved equal by the engineer.

2.10 BEDDING MATERIAL

A. Bedding material shall consist of ¾" crushed stone conforming to the requirements of Section 02202 of these Specifications.

2.11 BANK GRAVEL

A. Bank gravel refill shall conform to the requirements of Section 02202 of the Specifications.

PART 3 - EXECUTION

3.01 GENERAL

A. Earthwork, traffic control, environmental protection, rock excavation (where applicable), dewatering, support of excavations, sheeting and shoring, backfilling

and compacting, etc. shall be done in accord with the applicable Sections of these Specifications.

B. Special manholes will be built as indicated by detailed drawings for the particular manhole.

C. Extra excavation below grade and outside the limits of the trench, where ordered shall be done in accord with Sections 02200 and 02201.

D. Existing manholes, where indicated on the Contract Drawings, shall be removed to facilitate construction of new manholes. Resultant material shall be removed and disposed of properly.

3.02 PLACING PRECAST MANHOLE SECTIONS

A. After the excavation has been completed as required, filter fabric placed, the bedding material shall be placed from the bottom of the excavation to the bottom of the manhole and suitably compacted in accord with the requirements of Section 02200. The bedding material shall cover the full bottom of the excavation and be at least 6 inches in depth.

B. The precast manhole section shall be carefully lifted and lowered to position in the excavation by suitable rigging. While the section is suspended, it shall be inspected and examined for defects. No section shall be installed that is known to be defective. If any defective section is discovered after it is installed, it shall be removed, replaced with a sound section and removed from the worksite at no expense to the District.

C. The joint between sections shall be thoroughly cleaned in accord with the manufacturer’s instructions to assure a watertight joint.

D. Precast reinforced concrete manhole sections shall be set to be vertical and the sections in true alignment.

E. Any manhole which shows any settlement or displacement after installation shall be taken out and reinstalled to the satisfaction of the Engineer.

F. Butyl rubber gaskets or approved equal shall be installed in all joints in accord with the manufacturer’s recommendations.

G. All holes in sections used for handling shall be thoroughly plugged with rubber plugs made specifically for this purpose or with non-shrink grout.

H. Openings or penetrations for lateral connections may be “core-bored”, where and if approved or directed by the Engineer.

3.03 BUILT IN PLACE MANHOLES

A. Masonry concrete units may be used to construct manholes provided they form a manhole required by the Contract Drawings and are constructed in accord with the details shown on the Standard Plans.

B. Walls of block manholes 12 feet or more deep (invert to cover) shall be built 12 inches thick at all points more than 8 feet below finished grade.

3.04 INVERTS AND WATERTABLES

A. Inverts and water tables shall be built of brick or formed with poured concrete as directed by the Engineer. Inverts shall, in general, have a uniform grade between the inverts of the inlet and outlet pipes. Joints in brick inverts shall be tooled to be slightly concave and polished.

B. Only clean bricks shall be used. Bricks shall be moistened 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. Each brick shall be laid in a full bed and joint of mortar without requiring subsequent grouting, flushing or filling, and shall be thoroughly bonded.

3.05 PLASTERING AND CURING MASONRY

A. Outside faces of masonry walls shall be plastered with mortar ½-inch thick.

B. If required, the masonry shall be properly moistened prior to application of the mortar. The mortar shall be carefully spread and troweled. After hardening, the mortar shall be carefully checked by being tapped for bond. Unbonded or unsound mortar shall be removed and replaced.

C. Brick masonry and mortar shall be protected from too rapid drying by the use of burlap, kept continually moist, or by other suitable means, and shall be protected from the weather and frost.

3.06 SETTING MANHOLE FRAMES

A. Cast iron frames shall be set to a full even bearing on cement mortar flush with finished grade or as directed by the Engineer. The flange of the frame shall not project outside of the masonry on which it rests. The inner circle of the frame shall not overhang the brickwork by more than one inch (1”).

- A minimum of two courses of red brick ASTM C-32-72, Grade SM mortared in place (not to exceed 18” in height) shall be placed directly under the manhole frame. The precast concrete grade rings shall not be allowed.

B. Until such time as cast iron frames and covers are set, manhole tops must be kept covered with temporary coverings to exclude persons, animals, dirt and foreign substances.

3.07 MANHOLE DROP INSTALLATION - NOT USED

A. Drop connection structures shall be constructed at the location indicated on the Contract Drawings or those manholes designated at Type IV manholes, in accord with Sewer Standards Plan 62-204, Serial No. 16902.

B. The drop pipe inside the manhole shall be secured to the inside wall of the manhole using stainless steel straps spaced at no less than four feet (4’) o.c. and in no case shall less than two straps be used. The straps shall be mounted to the manhole wall using ¼” stainless steel lag bolts and shields or edge type anchors embedded into the concrete of the manhole.

END OF SECTION

SECTION 02610

SEWER TESTING AND CLEANING

PART 1 - GENERAL

1.01 SCOPE OF WORK

The tests shall be conducted by the Contractor using his own equipment, or by a subcontractor approved by the Engineer. All equipment proposed for conducting the tests shall be subject to the approval of the Engineer. Drawings must be in sufficient detail to show the setup and proposed operation, and no testing will be permitted without prior approval of the Engineer.

A. Furnish all labor, materials, equipment and incidentals required to clean and test all new pipe installed under this Contract as specified herein.

B. The term “sewer”, as used in this Section, shall apply to both stormwater pipelines, overflow pipelines and sewer pipelines.

C. All sewers shall be tested for leakage by an infiltration test if the ground water level is a minimum of 2-feet above the crown of the pipe for the full length of the section tested.

D. When sewers cannot be tested by an infiltration test as specified above, they shall be tested by an exfiltration test using water or air.

E. Where active sewer connections must be connected to the new sewer and the above testing procedures cannot be completed, testing shall be by Television Inspection and applicable tests of the respective pipe sections as per 3.01 E. below.

1.02 RELATED WORK

A. Reinforced concrete pipe is included in Section 02612. - NOT USED

B. Ductile iron pipe for sanitary sewer is included in Section 02615. - NOT USED

C. Polyvinyl chloride sewer pipe is included in Section 02622.

D. Vitrified clay pipe is included in Section 02508. - NOT USED

E. Television Inspection is included in Section 02764.

F. Cured-in-Place Pipe (CIPP) for Sewer Mains in Section 02766

1.03 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C828 - Standard Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Lines.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 TESTING

A. General

1. The Contractor shall test the first section of pipeline as soon as it is installed to demonstrate that the work conforms to these Specifications. The initial test section shall not be more than 500-feet of pipeline.

2. Testing of pipe shall closely follow pipe laying. The Contractor shall have no more than 1000-feet of untested sewer or drain constructed at any time.

B. Infiltration Test

1. Pipe shall be tested for infiltration after the backfill has been placed and the ground water allowed to return to normal elevation. Infiltration tests shall be made under the supervision of the Engineer and the length of line to be tested shall be the length between adjacent manholes. The allowable infiltration shall be 100 gallons per inch of diameter per day per mile of pipe in each section tested. There shall be no gushing or spurting leaks.

2. If an inspection of the completed sewer or any part thereof shows pipes or joints which allow noticeable infiltration of water, the defective work or material shall be replaced or repaired as directed, at no additional cost to the District.

3. Rates of infiltration shall be determined by means of V-Notch weirs, pipe spigots, or by plugs in the end of the pipe to be furnished and installed in an approved manner and at such times and locations as may be directed by the Engineer.

C. Exfiltration Test

1. Leakage tests by exfiltration shall be made before or after backfilling at the discretion of the Engineer. The length of pipe to be tested shall be such that the head over the crown at the upstream crown is not less than 2-feet and the head over the downstream crown is not more than 4-feet. The pipe shall be plugged by pneumatic bags or mechanical plugs in such a manner that the air can be released from the pipe while it is being filled with water. Before any measurements are made, the pipe shall be kept full of water long enough to allow absorption and the escape of any trapped air to take place. Following this, a test period of at least one hour shall begin. Provisions shall be made for measuring the amount of water required to maintain the water at a constant level during the test period.

2. If any joint shows an appreciable amount of leakage, the jointing material shall be removed and the joint repaired. If any pipe is defective, it shall be removed and replaced. If the quantity of water required to maintain a constant level in the pipe does not exceed 100 gallons per inch of diameter per day per mile of pipe and if all the leakage is not confined to a few joints, workmanship shall be considered satisfactory. If the amount of leakage indicates defective joints or broken pipes, they shall be corrected or replaced.

D. Air Testing

1. When the Engineer specifies or directs that leakage tests shall be made using the low-pressure air test method, the Contractor will be required to provide all equipment, test plugs in the required sizes, appurtenances, connecting hose or pipe, labor and materials necessary to conduct and control the test as herein specified. All testing shall be performed in accordance with the procedures described in ASTM C828.

2. All tests shall be conducted on the completed sewer pipeline between manholes. Testing of shorter sections of pipeline will only be permitted with the approval of the Engineer.

3. The Contractor is cautioned regarding the importance of properly installing the end caps used to plug hubs, wyes, bends, ends of laterals, and other inlets, and securing them against movement during installation of sewer. Failure to take this precaution can cause a properly installed sewer pipeline to fail a low-pressure air test.

4. The Contractor is further cautioned regarding the safety of personnel during the test. Low-pressure air can exert a substantial force on a pipe plug, even on all diameter pipe plugs. The Contractor will be responsible to insure that all plugs utilized are in good condition and that they will not be pressurized beyond the limits recommended by their manufacturer.

5. No one will be permitted in a manhole containing a plug while air is under

pressure in the pipeline being subjected to low-pressure air testing.

6. All gages, controls, and appurtenances for equipment used to conduct the test will be located outside of manholes. Connections to the line under test, test plugs, and other equipment will be made with hose or pipe extensions which will safely contain the pressures necessary to conduct and control the test.

7. Immediately prior to testing, all lines will be cleaned and flushed with water. Pipe manufactured in accordance with ASTM Specification C-76, where applicable, shall be soaked for a period of 12 hours to saturate the pipe wall prior to testing with low-pressure air.

8. The equipment used to introduce the low-pressure air into the sewer line shall include a safety valve, or release device, located in the equipment at a point which will insure that, during the build-up of test pressure, the pipeline being tested will not be subjected to an internal pressure that could damage a properly installed pipeline.

9. The gage used to measure the drop in pressure shall have a 4-inch diameter face with a scale of 0 to 15 PSI (pounds per square inch) in 0.1 PSI increments, or as approved by the Engineer.

10. The Contractor shall determine the elevation of the ground water table in the area of the pipeline being subjected to the low-pressure air test in a manner approved by the Engineer.

11. After cleaning and flushing the line, plugs will be installed in the pipeline being subjected to the low-pressure air test and braced as necessary to secure the plugs in place.

12. Utilizing the approved equipment, air at low pressure will be slowly introduced into the pipeline until the pressure within the pipeline being tested increases to 4 PSIG greater than the back pressure exerted by the ground water table over the pipe being tested, but not greater than 9 PSIG, (back pressure = 1 PSIG per 2.31 feet of water) as determined above (if the water table is not at a level above the pipe, the test pressure should be brought up to 4 PSIG). Allow at least 2 minutes to elapse prior to starting the test. If necessary, allow a small amount of air to slowly enter the pipeline in order to maintain a pressure of 4 PSIG above the back pressure due to the water table, or 4 PSIG if there is no back pressure to compensate for.

13. Disconnect the supply air hose from the source of air and allow the air pressure within the pipe being tested to drop to 3.5 PSIG above the backpressure due to the existing ground water table (or to 3.5 PSIG if there is no water table). At this point, start measuring the time for the pressure in the pipeline to drop 1 PSIG (or to drop to 2.5 PSIG if there is no back pressure due to a water table).

14. The time required to drop 1 PSIG shall not be less than that indicated in Table 1 for the size and length of pipeline being tested. If the time is less than that indicated in Table 1, the pipeline will be considered to have failed the test (See Table 1).

15. Any section of the sewer line which fails to meet this test will be repaired or replaced as necessary by the Contractor, and retested at no additional expense to the District.

16. The Contractor will be responsible for all costs and delays incurred due to efforts to locate and repair any leaks in any sewer line which fails the low-pressure air test, regardless of whether the failure is due to workmanship, material failure, the result of an improperly installed or braced end cap; or any sewer line damaged due to failure to provide a properly sized and operable safety valve or pressure relief device, on the testing equipment for protection of the pipeline being tested. No sewer line will be considered acceptable until it successfully passes the requirements of this test unless the requirement is waived by the Engineer.

17. All testing will be conducted by the Contractor or his approved sub-contractor in the presence of the District's Inspector. The Contractor or his subcontractor shall keep a written record which will show the results of the tests conducted. These records should include sufficient data on length of line, pressure levels, time for pressure drop and related features noted during the testing of each segment of the line. A copy of these records shall be given to the District.

TABLE 1

MINIMUM TIME REQUIRED FOR A PRESSURE DROP OF 1 PSIG AS REQUIRED IN LOW PRESSURE AIR TEST SPECIFICATION - MINUTES: SECONDS (BASED ON 0.0015 CFM/SQ. FT.)

Pipe Diameter (in.)	Specification Time for Length (L) Shown (min:sec)								
	100 ft.	150 ft.	200 ft.	250 ft.	300 ft.	350 ft.	400 ft.	450 ft.	500 ft.
4	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:47
6	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24	7:07
8	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24	12:40
10	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48	19:47
12	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38	28:29

15	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04	45:51
18	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41	64:06
21	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31	87:15
24	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33	113:58

Note: If lateral sewers are included in the test, their lengths may generally be ignored in computing required test times. In the event a test section, having a total internal surface area less than 625 square feet, fails to pass the air test when lateral sewers have been ignored, the engineer shall recompute the test time including all lateral sewers.

E. Sewer Pipe Joint Testing and Sealing with Low Pressure Air Using the “Test and Seal” Method.

1. This method is to be used only on new sewers that replace existing sewers that requires ‘live’ re-connection of existing sewer laterals. Test individual pipe joints to identify those that are defective and can be sealed by an internal pipe joint sealing process. See Construction Sequence on Drawings.

a. Low Pressure joint Test Procedure:

1) The testing device shall be positioned within the line in such a manner as to straddle the pipe joint to be tested.

2) The testing device end elements (sleeves) shall be expanded so as to isolate the joint from the remainder of the line and create a void area between the testing device and the pipe joint. The ends of the testing device shall be expanded against the pipe with sufficient inflation pressure to contain the air within the VOID without leakage past the expanded ends.

3) Air shall then be introduced into the VOID area until a pressure equal to or greater than the required test pressure is observed with the VOID pressure monitoring equipment. The air pressure shall be greater than 4psi, and shall not exceed a maximum of 8 psi.

4) After the VOID pressure is observed to be equal to or greater than the required test pressure, the air flow shall be stopped. If the VOID pressure decays by more than 2 psi within 15 seconds (due to joint leakage), the joint will have failed the test and shall be se sealed as specified (see Sewer Pipe joint Sealing).

b. Control Test: Prior to starting the pipe joint testing phase of the work, a two-part control test shall be performed as follows:

1) To insure the accuracy, integrity, and performance capabilities of the testing equipment, a demonstration test will be performed in a test cylinder constructed in such a manner that a minimum of two known leak sizes can be simulated. This technique will establish the test equipment performance capability in relationship to the test criteria and insure that there is no leakage of the test medium from the system or other equipment defects that could affect the joint testing results. If this test cannot be performed successfully, the Contractor shall be instructed to repair or otherwise modify his equipment and re-perform the test until the results are satisfactory to the Engineer. This test may be required at any other time during the joint testing work if the Engineer suspects the testing equipment is not functioning properly.

2) After entering each manhole section with the test equipment, but prior to the commencement of joint testing, the test equipment shall be positioned on a section of sound sewer pipe between pipe joints, and a test performed as specified. This procedure will demonstrate the reliability of the test requirement, as no joint will test in excess of the pipe capability. Should it be found that the barrel of the sewer pipe will not meet the joint test requirements, the requirements will be modified as necessary.

c. Test Records: During the joint testing work, records shall be kept which include:

1) Identification of the manhole section tested;

2) The test pressure used;

3) Location (footage) of each joint tested;

4) A statement indicating the test results for each joint tested.

2. If joints show visible leakage or have failed the low pressure air joint test procedure, the joint shall be sealed as follows:

a. Joint sealing shall be accomplished by forcing chemical sealing materials into or through faulty joints by a system of pumps, hoses, and sealing packers. Jetting or driving pipes from the surface that could damage or cause undermining of the pipe lines shall not be allowed. The sealing packer shall be installed and positioned over the fault joint by means of a measuring device and the closed-circuit television camera in the line. The procedure used by the Contractor for positioning the packer shall be accurate to avoid

overpulling the packer and not effectively sealing (grouting) the intended joint. The packer ends (end elements, sleeves) shall be expanded using controlled pressure. The expanded ends shall seal against the inside periphery of the pipe to form a VOID area at the faulty joint, now completely isolated from the remainder of the pipe line. Into this isolated area, sealant materials shall be pumped through the hose system at controlled pressures which are in excess of groundwater pressures. The pumping unit, metering equipment, and the packer device shall be designed so that proportions and quantities of materials can be regulated in accordance with the type and size of the leak being sealed.

b. Joint Sealing Verification: Upon completing the sealing of each individual joint, the packer shall be deflated until the VOID pressure meter reads zero pressure, and then reinflated and the joint retested as specified (see Sewer Pipe Joint Testing). Should the VOID pressure meter not read zero, the Contractor shall clean his equipment of residual grout material or make the necessary equipment repairs/adjustments to produce accurate VOID pressure readings. Joints that fail to meet the specified test criteria shall be resealed and retested until the test criteria can be met. NOTE: If the joints do not meet the test criteria within a reasonable period of time (as determined by and at the sole discretion of the Engineer), the section shall be dug up and replaced as directed by the Engineer and at the expense of the Contractor.

c. Residual Sealing Material: Residual sealing materials that extend into the pipe, reduce the pipe diameter, or restrict the flow shall be removed from the joint. The sealed joints shall be left reasonable “flush” with the existing pipe surface. If excessive residual sealing materials accumulate in the line (and/or if directed by the Engineer) the manhole section shall be cleaned to remove the residual materials.

d. Records: Complete records shall be kept of joint sealing performed in each manhole section. The records shall identify the manhole section in which the sealing was done, the location of each joint sealed, and the joint sealing verification results (see Sewer Pipe Joint Testing, Test Records).

e. Guaranty: 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 the work.

3. General: All chemical sealing materials used in the performance of the work specified shall meet or exceed physical properties as defined in

APWA publication “Assessment of Sewer Sealants” (September 1980, Office of R&D, U.S.EPA, Cincinnati, OH 45269).

a. Chemical Sealing Material: The chemical sealing material shall conform to the following:

1) A minimum of 10% acrylamide base material by weight in the total sealant mix. A higher concentration (%) of acrylamide base material may be used to increase strength or offset dilution during injection.

2) The ability to tolerate some dilution and react in moving water during injection.

3) A viscosity of approximately 2 centipoise which can be increased with additives.

4) A controllable reaction time from 10 seconds to 1 hour.

5) A reaction (curing) which produces a homogeneous, chemically stable, non-biodegradable, firm, flexible gel.

6) The ability to increase mix viscosity, density and gel strength by the use of additives.

7) Handling and mixing of chemical sealing materials shall be in accordance with the manufacturer’s recommendations.

3.02 CLEANING

A. At the conclusion of the work, thoroughly clean all pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered the pipes during the construction period. Debris cleaned from the lines shall be removed from the low end of the pipeline. If after this cleaning, obstructions remain, they shall be removed. After the pipelines are cleaned and if the groundwater level is above the pipe or following a heavy rain, the Engineer will examine the pipes for leaks. If any defective pipes or joints are discovered, they shall be repaired or replaced by the Contractor.

END OF SECTION

SECTION 02612

REINFORCED CONCRETE PIPE

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals necessary to install and test reinforced concrete pipe and fittings complete as shown on the Drawings and as specified herein.

B. All pipe and fittings shall be manufactured for this project and no pipe shall be furnished from stock.

1.02 RELATED WORK

A. Dewatering and drainage is included in 02140.

B. Excavation support systems is included in Section 02160.

C. Special Trench Refill 02202.

D. Sewer testing and cleaning are included in Section 02610.

E. Television inspection is included in Section 02764.

F. Concrete is included in Division 3.

1.03 SUBMITTALS

A. Submit to the Engineer, within thirty days of the Effective Date of the Agreement, the name of the pipe and fitting suppliers and a list of materials to be furnished.

B. Reinforced Concrete Pipe

1. Submit shop drawings, in accordance with Section 01300, showing layout and details of reinforcement, joint, method of manufacture and installation of pipe, specials and fittings, and a schedule of pipe lengths (including the length of individual pipes by diameter) for the entire job.

2. Submit with the shop drawings documentation that the fine and course aggregates to be used in manufacture of the concrete pipe comply with the requirements of Paragraph 2.01C. Documentation shall be less than 6 months old and shall indicate the source of the aggregates and the date of

the analysis. Similar documentation shall be submitted to the Engineer at least yearly while pipe is being manufactured for this project.

a. Documentation shall be signed and sealed by a professional engineer from a qualified independent materials testing laboratory that conforms to ASTM E329 and is regularly inspected by the Cement and Concrete Reference Laboratory of the National Bureau of Standards.

b. The Owner reserves the right to have independent analysis of aggregates if quality assurance tests of the pipe indicate noncompliance with aggregate requirements

3. Prior to each shipment of pipe, submit certified test reports that the pipe was manufactured and tested in accordance with the ASTM Standards specified herein.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C33 - Standard Specification for Concrete Aggregates.

2. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.

3. ASTM C150 - Standard Specification for Portland Cement.

4. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

5. ASTM C361 - Reinforced Concrete Low-Head Pressure Pipe.

6. ASTM C655 - Reinforced Concrete D-Load Culvert, Storm Drain and Sewer Pipe.

7. ASTM C822 - Standard Definitions and Terms Relating to Concrete Pipe and Related Products.

8. ASTM E329 – Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. The manufacturer shall be responsible for the performance of all acceptance tests as specified in Paragraph 5.1.2. of ASTM C76. In addition, all reinforced concrete pipe to be installed under this Contract may be inspected at the plant for compliance with these Specifications by an independent testing laboratory provided by the District. The manufacturer's cooperation in these inspections shall be required. The cost of inspection of all pipe approved for this Contract, plus the cost of inspection of a reasonable amount of disapproved pipe will be borne by the District. Refer to Article SC14.07 of the Supplementary Conditions for payment of excessive inspection costs. The pipe manufacturer shall:

1. have sufficient pipe made in advance so that a minimum of approximately 200-ft will be approved at each plant inspection. Pay for each plant inspection that does not result in this minimum length of R.C. pipe being approved, the cost being deducted from monthly progress payments.

2. notify the independent testing laboratory at least 48 hours prior to requesting pipe inspection.

B. Inspection of the pipe will also be made by the Engineer or other representatives of the District after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the Specification requirements, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.

PART 2 - PRODUCTS

2.01 REINFORCED CONCRETE PIPE

A. The pipe units shall be of the classes indicated on the drawings and shall conform to ASTM C76, Class IV, wall B or C straight pipe. The pipe interior shall be smooth and even, free from roughness, projections, indentations, offsets, or irregularities of any kind. The concrete mass shall be dense and uniform.

B. Non-air-entraining portland cement conforming to ASTM C150, Type II shall be used. The use of a non-bleeding, water-reducing, dispersing agent may be permitted subject to the specific approval of the Engineer. The use of any other admixture will not be permitted.

C. Fine aggregate shall consist of washed inert natural sand conforming to the requirements of ASTM C33, except for gradation with a maximum loss of 8 percent when subject to 5 cycles of the soundness test when using magnesium sulfate. Coarse aggregate shall consist of well-graded crushed stone or washed gravel conforming to the requirements of ASTM C33, except for gradation with a

maximum loss of 8 percent when subject to 5 cycles of the soundness test when using magnesium sulfate. Documentation of the aggregate to be used in the manufacturer of reinforced concrete pipe meet these specification requirements shall be submitted to the Engineer as stated in 1.03 above.

D. The 28-day compressive strength of the concrete, as indicated by cores cut from the pipe shall be equal to or greater than the design strength of the concrete. The concrete mass shall be dense and uniform. The average absorption shall not exceed 5.5 percent of the dry weight and no specimen shall exceed 6.0 percent. Reinforcement shall be circular for all concrete pipe. Quadrant steel shall not be used. Reinforcement shall be installed in both the bell and the spigot. At least one circumferential reinforcement wire shall be in both the bell and spigot area and reinforcement in the bell and spigot shall be adequate to prevent damage to concrete during shipping, handling and after installation. When cores indicate that reinforcing steel has less than 85 percent bond the pipe shall be subjected to a 3-edge bearing test to 13 psi to verify strength and water tightness.

E. Pipe may be rejected for any of the following reasons:

1. Exposure of any wires, positioning spacers or chairs used to hold the reinforcement case in position, or steel reinforcement in any surface of the pipe, except for ends of longitudinal reinforcing, and as permitted by ASTM C76, Section 8.2.

2. Transverse reinforcing steel found to be in excess of 1/4-in out of specified position after the pipe is molded.

3. Any shattering or flaking of concrete at a crack.

4. Voids, with the exception of a few minor bugholes, on the interior and exterior surfaces of the pipe exceeding 1/4-in in depth unless properly and soundly pointed with mortar or other approved material.

5. Unauthorized application of any wash coat of cement or grout. Any pipe dressing procedures shall be subject to approval of the Engineer.

6. A deficiency greater than 1/4-in from the specified wall thickness of pipe 30-in or smaller in internal diameter.

7. A deficiency greater than 6 percent from the specified wall thickness of pipe larger than 30-in in internal diameter, except that the deficiency may be 8 percent adjacent to the longitudinal form joint, provided that the additional deficiency does not lie closer than 20 percent of the internal diameter of the pipe. The deficiencies in wall thickness permitted herein do not apply to gasket contact surfaces in gasketed joint pipe.

8. A variation from the specified internal diameter in excess of 1 percent, or interior surfaces which have been reworked after placing of concrete. The variation in internal diameter permitted herein does not apply to gasket contact surface in gasketed joint pipe.

9. A hollow spot (identified by tapping the internal surface of the pipe) which is greater than 30-in in length or wider than 3 times the specified wall thickness. Repair of such defective areas not exceeding these limitations may be made as specified in Paragraph 2.01R.

10. Defects that indicate imperfect molding of concrete; or any surface defect indicating honeycomb or open texture (rock pockets) greater in size than area equal to a square with a side dimension of 2-1/2 times the wall thickness or deeper than two times the maximum graded aggregate size; or local deficiency of cement resulting in loosely bonded concrete, the area of which exceeds in size the limits of area described in Paragraph 2.01E9 above when the defective concrete is removed. Repair of such defects not exceeding these limits may be made as specified in Paragraph 2.01R.

11. Any of the following cracks:

    a. A crack having a width of 0.005-in to 0.01-in throughout a continuous length of 36-in or more.

    b. A crack having a width of 0.01-in to 0.03-in or more throughout a continuous length of 1-ft or more.

    c. Any crack greater than 0.005-in extending through the wall of the pipe and having a length in excess of the wall thickness.

    d. Any crack showing two visible lines of separation for a continuous length of 2-ft or more, or an interrupted length of 3-ft or more anywhere in evidence, both inside and outside.

    e. Cracks anywhere greater than 0.03-in in width.

F. The pipe shall be clearly marked as required by ASTM C76 in a manner acceptable to the Engineer. The markings may be at either end of the pipe for the convenience of the manufacturer, but for any one size shall always be at the same end of each pipe length. Pipe shall not be shipped until the compressive strength of the concrete has attained 4,000 psi and not before five days after manufacture and/or repair, whichever is the longer

G. Pipe shall have a minimum laying length of approximately 8-ft, except for closure pieces as approved by the Engineer. Have available at the site of the work sufficient pipe of various lengths to affect closure at manholes or structures that cannot be located to accommodate standard lengths. Short lengths of pipe made for closure etc may be used in the pipeline at the end of construction if properly spaced. The length of the incoming and outgoing concrete pipe at each structure shall not exceed 4-ft. Maximum laying length shall not exceed 16-ft, but the installation of 16-ft lengths will depend upon the ability to handle such lengths of pipe in sheeted trenches, comply with trench width requirements, maintain the integrity of the sheeting and avoid disturbance to adjacent ground. If in the opinion of the Engineer the use of 16-ft lengths is impracticable, shorter lengths shall be used.

H. After manufacture, each length of pipe shall be checked against the length noted on the shop drawings. Pipe more than 1-1/2-in longer than that shown on the shop drawings shall not be used on this project. Variations in length of the same pipe shall not exceed ASTM C76 requirements.

I. During manufacturing, measuring devices shall be used to assure joint assembly is within the tolerance of ASTM C76 and these Specifications.

J. The Engineer shall have the right to cut cores from such pieces of the finished pipe as he/she desires for such inspection and tests as he/she may wish to apply. Holes left by the removal of cores shall be filled in an approved manner by and at the expense of the manufacturer. Core drilling shall be carried out by the pipe manufacturer at his/her expense. The number of cores shall not exceed the requirements of ASTM C76.

K. The Engineer shall also have the right to take samples of the concrete after it has been mixed, or as it is being placed in the forms or molds and to make such inspection and tests thereof as he/she may wish.

L. At the start of the work, a set of test cylinders shall be taken each day on which pipe is manufactured for the project or more often if required. This may ultimately be reduced to one set of three specimens for every 50 cu yds of concrete placed, if the uniformity of results warrants and if approved by the Engineer. At the start of the work, a relationship shall be established between ultimate strength of test cylinders stored in a standard manner as compared to cylinders steam cured with the pipe and as compared to cores taken from the corresponding finished pipe. At least five sets of tests shall be made.

M. Test cores may be taken for every 500 linear feet of pipe manufactured, but not less than once each day on which pipe is manufactured for the project. Cores may be reduced to one set of two per week (or possibly fewer, but not less than one set for every 1,500 linear feet), if a satisfactory relationship is established between cores and cylinders made and cured in the standard manner. This

relationship shall not vary by more than 10 percent more or less from the average ratio. Cores may be drilled in any manner which will provide a smooth core face. All pipe cylinders and cores shall be 4-in in diameter. Cores shall be carefully saw-trimmed and capped in a vertical position with a sulfur cap of minimum thickness, at least one day before being tested.

N. Core testing shall conform to Standard ASTM Methods.

O. At the time of inspection, the pipe will be carefully examined for compliance with the appropriate ASTM and project specifications and shop drawings. All pipes shall be inspected for general appearance, dimension, "scratch-strength," blisters, cracks, roughness, soundness, etc. All pipes will be checked for soundness by being tapped and scratched over a reasonable portion of the area, at least once on every 50 sq in of pipe surface. The surface shall be dense and close-textured. Cores also shall serve as a basis for rejection of pipe, particularly if lamination or poor bond of reinforcement is apparent.

P. The manufacturer shall use measuring devices to assure joint assembly is within tolerances of ASTM C76 and these Specifications. If, during construction, the pipes cannot be satisfactorily joined, the manufacturer shall pre-join the pipe at the plant.

Q. Unsatisfactory or damaged pipe will be either permanently rejected or returned for minor repairs. Only that pipe actually conforming to the specifications and accepted will be listed for approval, shipment and payment. Approved pipe will be so stamped or stenciled on the inside before it is shipped. All pipe which has been damaged after delivery will be rejected and if such pipe already has been laid in the trench, it shall be acceptably repaired, if permitted, or removed and replaced, entirely at the Contractor's expense.

R. Pits, blisters, rough spots, breakage and other imperfections may be repaired, subject to the approval of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Non-shrink cement mortar used for repairs shall have a minimum compressive strength of 6,000 psi at the end of 7 days and 7,000 psi at the end of 28 days, when tested in 3-in cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs subject to the approval of the Engineer.

S. Supply a length of concrete pipe with three holes of proper diameter cut at the quarter points for each of the Y-saddles required. The holes shall be cut halfway through the pipe by the manufacturer while the concrete is still "green" leaving the reinforcement intact. These pipes shall be reserved for use with Y-saddles only and the remaining concrete and reinforcement shall be cut in the field only from the hole to be used. The holes not used shall be plugged with non-shrink cement mortar as specified above using a neat cement slurry prior to plugging

with mortar. Any alternate method for providing for service connections shall be submitted to the Engineer for approval.

2.02 JOINTS FOR REINFORCED CONCRETE PIPE

A. Joints shall be concrete and rubber tongue and groove or bell and spigot type joint conforming to ASTM C361 with provisions for using a round rubber O-Ring gasket in a recess in the spigot end of the pipe. The bevel on the bell of the pipe shall be between 1-1/2 degrees and 2-1/2 degrees. The diameters of the joint surfaces which compress the gasket shall not vary from the true diameters by more than 1/16-in.

B. The round rubber "O-Ring" gaskets shall conform to ASTM C443 except as otherwise specified herein. Two gaskets shall be submitted to the Engineer for tests at least 30 days before joining any pipe.

C. Specimens shall be heated in a dry oven to 150 degrees F for 6-hour duration and five specimens shall be tested by immersion, one each as follows: 2-hour immersion in petroleum ether, 72-hour immersion in saturated Hydrogen Sulfide solution, 72-hour immersion in 1 percent NaOH solution, 72-hour immersion in standard soap solution (80 percent alcohol), 72-hour immersion in 10 percent NaCl solution. The specimens shall show no detrimental change in color, texture, or feeling upon completion of the above tests. Specimens of the gaskets shall be subjected to tensile tests of approximately 100 psi before and after immersion and heating tests and shall show an elongation of at least 25 percent. Upon release from the tensile tests, each specimen shall return to its original length. The manufacturer shall supply test data and affidavits showing compliance with these requirements. Tests shall have been conducted within six months of the start of manufacture of the pipe.

D. The gaskets shall be designed and manufactured so that the completed joint will withstand an internal water pressure in excess of 13 psi for a period of 10 minutes without showing any leakage by the gasket or displacement of it. The pipe manufacturer shall provide facilities for testing the effectiveness of the joints against leakage and one such test may be required for each 500-ft of pipe for each type of joint manufactured. Such tests shall be made by an internal or external pressure against the joint of at least 13 psi for a period of ten minutes in accordance with ASTM C443. The completed joint, when installed in place in the work, shall be capable of withstanding a groundwater pressure of 13 psi without exceeding the allowable leakage specified for the pipe testing.

E. The manufacturer shall inspect all pipe joint surfaces for out-of-roundness and pipe ends for squareness. The manufacturer shall furnish to the Engineer a notarized affidavit stating all pipe meets the requirements of ASTM C76, these Specifications and the joint design.

PART 3 - EXECUTION

3.01 LAYING CONCRETE PIPE (OPEN CUT)

A. Care shall be taken in loading, transporting and unloading to prevent injury to the pipe or fittings and the joint surfaces. Pipe or fittings shall not be dropped. All pipe or fittings shall be examined before laying and no piece shall be installed which is found to be defective.

B. As soon as the excavation is completed to the normal grade of the bottom of the trench, place filter fabric and 6-inch of ¾-in crushed stone in the trench and the pipe shall be firmly bedded to conform accurately to the lines and grades indicated on the Drawings. ¾-in crushed stone shall conform to the requirements of Section 02202. Blocking under the pipe will not be permitted.

C. ¾-in crushed stone shall be placed and compacted to give complete vertical and lateral support for the lower section of the pipe as indicated on the Drawings. A depression shall be left in the supporting screened gravel at the joint to prevent contamination of the rubber gasket immediately before being forced home. Before the pipe is lowered into the trench, the spigot and bell shall be cleaned and free from dirt. Gasket and bell shall be lubricated by a vegetable lubricant which is not soluble in water, furnished by the pipe manufacturer and harmless to the rubber gasket. The pipe shall be properly aligned in the trench to avoid any possibility of contact with the side of the trench and fouling the gasket. As soon as the spigot is centered in the bell of the previously laid pipe, it shall be forced home with jacks or come-alongs. After the gasket is compressed and before the pipe is brought fully home, each gasket shall be carefully checked for proper position around the full circumference of the joint. Steel inserts shall be used to prevent the pipe from going home until the feeler gage is used to check the final position of the gasket. The jacks or come-alongs shall be anchored sufficiently back along the pipeline (a minimum of five lengths) so that the pulling force will not dislodge the pieces of pipe already in place. Only a jack or come-along shall be employed to force the pipe home smoothly and evenly and hold the pipe while backfilling is in progress. Under no circumstances shall crowbars be used nor shall any of the motor driven equipment be used.

D. As soon as the pipe is in place and before the come-along is released, backfill shall be placed as indicated on the Drawings and compacted for at least one-half the length of pipe. Not until this backfill is placed shall the come-along be released. If any motion at joints can be detected, a greater amount of backfill shall be placed before pressure is released. When pipe laying is not in progress, including lunchtime, the open ends of the pipe shall be closed by a watertight plug or other approved means.

E. Carefully regulate the equipment and construction operations such that the loading of the pipe does not exceed the loads for which the pipe is designed and manufactured. Any pipe damaged during construction operations shall promptly and satisfactorily be repaired or replaced at the Contractor's expense.

3.02 INSPECTION, CLEANING AND TESTING

A. All pipe shall be television inspected in accordance with Section 02764.

B. All pipe shall be cleaned and tested in accordance with Section 02610.

END OF SECTION

SECTION 02622

POLYVINYL CHLORIDE SEWER PIPE

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to install and test polyvinyl chloride (PVC) sewer pipe and fittings, complete as shown on the Drawings and as specified herein.

B. Pipe or piping refers to all pipe, fittings, material and appurtenances required to construct PVC sewer pipe complete in place.

1.02 RELATED WORK

A. SECTION 02200, EARTHWORK

B. SECTION 02610, SEWER TESTING AND CLEANING

C. SECTION 02721, LAYING SEWER AND DRAIN PIPE, GENERAL

D. SECTION 02764, TELEVISION INSPECTION

1.03 QUALITY ASSURANCE

A. All pipe delivered to the job site shall be accompanied by test reports certifying that the pipe and fittings conform to the herein-mentioned ASTM specifications. In addition, the pipe shall be subject to thorough inspection and tests, the right being reserved for the Engineer to apply such tests as the Engineer deems necessary.

B. All tests shall be made in accordance with the methods prescribed by the herein - mentioned ASTM specifications, and the acceptance or rejection shall be based on the test results.

C. The Contractor shall furnish all labor necessary to assist the Engineer in inspecting the pipe. Pipe will be inspected upon delivery, and such as does not conform to the requirements of this Contract shall be rejected and shall immediately be removed by the Contractor.

1.04 REFERENCES

A. American Society for Testing and Materials (ASTM) Publications

1. D3034 - Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

2. F679 - Specification for Poly (vinyl chloride) (PVC) Large - Diameter Plastic Gravity Sewer Pipe and Fittings.

3. F477 - Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

4. D 3212 - Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

5. F794 Poly (vinyl chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter. (Only closed profile gravity sewer pipe will be considered based on this ASTM specification.)

6. F1803 Poly (vinyl) (chloride) (PVC) Closed Profile Gravity Sewer Pipe.

1.05 SUBMITTALS

A. Submit in accordance with Section 01300.

B. Submit shop drawings or descriptive literature, or both, showing pipe dimensions, joints, joint gaskets, and other details for each size of pipe to be furnished for the project. All pipe furnished under the Contract shall be manufactured only in accordance with the specifications and the reviewed drawings.

1.06 DELIVERY, STORAGE AND HANDLING

A. All items shall be bundled or packaged in such a manner as to provide adequate protection of the ends during transportation to the site. Any pipe damaged in shipment shall be replaced as directed by the ENGINEER.

B. PVC items deteriorate in sunlight and are slightly brittle, especially at lower temperatures, so care shall be taken in loading, transporting and unloading items to prevent injury to the items. All items shall be examined before installation and no piece shall be installed which is found to be defective. Handling and installation of pipe and fittings shall be in accordance with the manufacturer's instructions, referenced standards and as specified herein.

C. Any pipe or fitting showing a crack or which has received a blow that may have caused an incident fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work.

D. While stored, pipe shall be adequately supported from below at not more than 3-ft intervals to prevent deformation. The pipe shall be stored in stacks no higher than that given in the following table:

Pipe Diameter (inches)	Max. No. of Rows Stacked
8 or less	5
12 to 21	4
24	3

E. Pipe and fittings shall be stored in a manner which will keep them at ambient outdoor temperatures and out of the sunlight or delivered to the site so that no pipe is exposed to sunlight for more than 30 days. Temporary shading as required to meet this requirement shall be provided. Simple covering of the pipe and fittings which allows temperature buildup or direct or indirect sunlight will not be permitted.

F. If any defective item is discovered after it has been installed, it shall be removed and replaced with an exact replacement item in a satisfactory manner by the Contractor, at the Contractor's own expense. All pipe and fittings shall be thoroughly cleaned before installation and the interior shall be kept clean until testing.

G. In handling the items, use special devices and methods as required to achieve the results specified herein. No uncushioned devices shall be used in handling the item.

1.07 WARRANTY

A. Any repairs made as a result of the inspection, for example, joint sealing or pipe section replacement- shall be warranted for one year. At the end of the one year warranty period, the repair will be inspected and shall be tested by the Contractor as, and any deficiencies shall be corrected by the Contractor, also as described.

PART 2 - PRODUCTS

2.01 PIPE, FITTINGS, AND SPECIALS

A. The polyvinyl chloride pipe and fittings, including also those required for stubs, shall conform to one of the following:

1. ASTM D3034 for diameters 4-inch through 15-inch,

2. ASTM F679 (Wall thickness T- 1) for diameters 18-inch through 27-inch,

3. ASTM F949 for 4 to 36 inch diameter polyvinyl chloride (PVC) pipe with a smooth interior.

4. Closed profile pipe conforming to ASTM F1803 for diameters 18-inches through 48-inches.

5. ASTM F794 for diameters 18-inches through 48-inches.

B. The pipe shall have pipe diameter to wall thickness ratio (SDR) of a maximum of 35, unless otherwise indicated and/or approved by the Engineer. Closed profile pipe shall have a minimum stiffness of 46 psi for 18 inch to 27-inch PVC sewer pipe and minimum stiffness of 50 psi for 30-inch and larger diameter PVC pipe.

C. Straight pipe shall be furnished in lengths of not more than 13 feet, and Y-branches shall be furnished in lengths of not more than 3 feet, unless otherwise permitted by the Engineer. Saddle Y-branches will not be allowed.

D. Fittings and special pipe pieces (specials) shall conform to the specifications for straight pipe insofar as applicable and to the details indicated on the Contract Drawings.

E. Foundation, base, haunching, backfill and bedding shall be as shown on the Drawings and as specified in Sections 02202 and 02200.

F. Filter fabric shall have an effective opening size of 70 µm.

2.02 JOINTS

A. Joints for the polyvinyl chloride pipe shall be push-on bell and spigot joints using elastomeric ring gaskets conforming to ASTM F477. The gaskets shall be securely fixed into place in the bells so that they cannot be dislodged during joint assembly. The gaskets shall be of a composition and texture which is resistant to common ingredients of sewage and industrial wastes, including oils and groundwater, and which will endure permanently under the conditions of the proposed use. The joints shall conform to ASTM D3212.

PART 3 - EXECUTION

3.01 EXECUTION - GENERAL

A. The program of earthwork, rock excavation, dewatering, traffic control, support of excavation, environmental protection, backfilling and compacting, handling sanitary sewage and storm water flows, etc., shall be done in accordance with the applicable Sections of the Contract Documents.

B. Removal and disposal of existing sewer and appurtenances shall be done in accord with Section 02053.

C. Where and as shown on the Contract Drawings, the Contractor will be required to remove and relay portions of existing sanitary or storm house connection laterals, in conjunction with the installation of new sanitary sewers and storm drains. At certain other locations, District forces will be required to offset water services affected by the construction. At certain other locations other utility owners will be performing utility relocation work. The Contractor shall coordinate his scheduling of work of said utility owners.

D. Pipe shall be installed in accordance with applicable pipe section of these Specifications.

E. Pipe shall be laid in a dry trench on a minimum of 6-inches of ¾" crushed stone base at the grade specified with ¾" stone haunching up the sides to level with top of all plastic pipe size 15-inch and less and other pipes size 18-inches and up to the spring line of larger plastic, unless otherwise ordered by the Engineer and adequately hand tamped around all type and size pipes. All approved filter fabric shall be placed and wrapped around crushed stone bedding. Bell holes shall be made in the ¾" stone bedding to ensure that all pipe is firmly supported on the entire barrel portion.

F. Pipe shall be connected at joints with the use of a push-on integral rubber gasket on all plastic pipe conforming with the designated ASTM specifications.

G. Wyes, bends, inlets, tees, chimneys, etc., shall be installed as shown or directed in the pipeline. The Contractor shall have a sufficient quantity of fittings on hand that can be installed as required around existing utilities as directed by the Engineer.

H. Existing house connection laterals (sanitary and storm) shall be temporarily reconnected to the new sanitary sewer or storm drain until such time as the permanent connection can be made.

I. Backfill material shall be placed in lifts as specified in Section 02200 and compacted in the full width and length of the trench up to the approved height above the pipe and below the surface to be paved as specified.

J. Trench stabilization and support systems shall be used for all installation work and shall conform with OSHA regulations. Where indicated on the Drawings and as specified or ordered by the Engineer, the excavation support system shall be installed and either be removed or left in-place, as determined by the Engineer.

K. Concrete trench plugs shall be placed at the locations shown on the Contract Drawings. Backfill shall be placed evenly on each side of the trench plug.

3.02 INSPECTION

A. Each pipe unit shall be inspected before being installed. No single piece of pipe shall be laid unless it is generally straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16 in. per ft. of length with a maximum deviation of 3/4 in. per length of pipe. If a piece of pipe fails to meet this required check for straightness, it shall be rejected and removed from the site. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit.

3.03 INSTALLATION

A. Pipes and fittings complying with ASTM F949 shall be installed in accordance with ASTM D2321.

B. The pipe bedding shall be as shown on the Drawings and in accordance with Section 02721.

C. Suitable bell holes shall be provided, so that after placement, only the barrel of the pipe receives bearing pressure from the supporting material.

D. All pipe and fittings shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.

E. Pipe and fittings shall be installed to the lines and grades indicated on the Drawings or as required by the Engineer. Care shall be taken to ensure true alignments and gradients.

F. Before any joint is made, the previously installed unit shall be checked to assure that a closed joint with the adjoining unit has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber or other unyielding object.

G. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe units together so that they will fit with a minimum open recess inside and outside and have tightly sealed joints. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends.

H. Joints shall not be "pulled" or "crimped" unless permitted by the Engineer.

I. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units and new gaskets.

J. Details of gasket installation and joint assembly shall follow the directions of the manufacturers of the joint material and of the pipe, all subject to review by the Engineer. The resulting joints shall be watertight and flexible.

K. All premolded gasket joint polyvinyl chloride pipe of a particular manufacturer may be rejected if there are more than five unsatisfactory joint assembly operations or "bell breaks" in 100 consecutive joints, even though the pipe and joint conform to the appropriate ASTM Specifications as hereinbefore specified. If the pipe is unsatisfactory, as determined above, the Contractor shall, if required, remove all pipe of that manufacturer of the same shipment from the work and shall furnish pipe from another manufacturer which will conform to all of the requirements of these specifications.

L. Open ends of pipe and branches shall be closed with polyvinyl chloride stoppers secured in place in an acceptable manner.

M. After each pipe has been properly bedded, enough bedding material shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment. Bell holes, provided for jointing, shall be filled with bedding material and compacted. Bedding above the spring line of the pipe (see Drawings for material) shall be placed and compacted to complete the pipe bedding.

N. The Contractor shall take all necessary precautions to prevent flotation of the pipe in the trench. At all times pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs, or by other acceptable means.

O. If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe.

P. Pipelines shall not be used as conductors for trench drainage during construction.

3.04 ALLOWABLE PIPE DEFLECTION

A. Pipe provided under this specification shall be so installed as to not exceed a maximum deflection of 5 percent. Such deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.

B. Upon completion of a section of sewer, including placement and compaction of backfill, the Contractor shall measure the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be acceptable to the Engineer.

C. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem as the Engineer may require without additional compensation.

3.05 CLEANING

A. Care shall be taken to prevent earth, water, and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out the pipeline and manholes, being careful to prevent soil, water, and debris from entering any existing sewer.

3.06 HANDLING STORM RUNOFF AND SANITARY SEWAGE FLOWS

A. See Section 02150

3.07 REMOVAL AND DISPOSAL OF EXISTING SEWERS AND MANHOLES

A. See Section 02053.

3.08 LOW PRESSURE AIR TEST AND TELEVISION INSPECTION

A. Refer to Section 02610 and Section 02764.

3.09 UNDERGROUND UTILITY MARKING

The tape shall be provided and installed in accordance with Section 02317.

END OF SECTION

SECTION 02628

PIPE REPAIR COUPLINGS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to connect new replacement sewer pipe and wyes to existing pipe; and repair existing sewer pipe; complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Trenching, backfilling and compaction is included in Section 02200 Earthwork.

B. Vitrified clay pipe is included in Section 02508.- NOT USED

C. PVC pipe is included in Section 02622.

1.03 SUBMITTALS

A. Submit to the Engineer the name of the manufacturers and model number and data sheets of all materials to be furnished.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Flexible sleeve type couplings to connect different pipe types shall be of corrosion resistant rubber or PVC with Series 300 stainless steel clamp bands. Flexible sleeve type couplings shall be as manufactured by Fernco, Mission Rubber Company, Inc., Calder, or equal. All stainless steel bands shall be coated with bitumastic.

B. Flexible donut type couplings to connect different pipe types shall be of corrosion resistant rubber or PVC. Flexible donut type couplings shall be as manufactured by Fernco or equal.

C. See MDC Sanitary Sewer and Storm Drain Connection Manual for additional requirements.

PART 3 - EXECUTION

3.01 INSTALLATION OF PIPE REPAIR COUPLINGS

A. Existing sewer pipe shall be excavated with care so no damage to the pipe or existing fittings is caused. Hand digging around the existing pipe will be required to provide a clear opening for repairing or removing and reinstalling new pipe as specified herein.

B. All repair couplings shall be examined before installation and none shall be installed which are found to be defective.

C. Installation of all repair couplings shall be in accordance with manufacturer's instructions, the pipe manufacturer and as specified herein.

D. Any damage to existing pipe or fittings other than pipe or fittings specifically intended to be removed, replaced or abandoned as part of this Contract shall be repaired by the Contractor as directed by the Engineer. If the Contractor damages existing pipe or fittings through error or for his own convenience he shall repair all damages at his own expense.

E. Flexible sleeve type couplings and donut type couplings shall be installed for connecting new replacement PVC pipe and fittings to existing sewer pipe or service connections, regardless of the type of existing pipe material. Pipe rehabilitation using a sleeve type and a donut type coupling or using two-sleeve type couplings shall be as shown on the Drawings and as specified herein.

F. Flexible sleeve type couplings shall be installed over smooth, clean spigot or cut ends of pipe. If cutting pipe is required, the cutting shall be done by machine or tool specifically intended for cutting the type of pipe being worked on. All cutting of pipe shall be at right angles to the axis of the pipe and shall leave a smooth cut.

G. Replacement of existing sewer pipe at service connection replacements using flexible couplings shall consist of removing the pipe to the length required. Care shall be exercised so that on the existing pipe left-in-place, a clean, unbroken spigot end (or smooth cut end) and a clean, unbroken bell end (or smooth cut end) are available to connect to the replacement pipe. The Contractor shall then insert a donut coupling into the bell end of the existing pipe and shall install the replacement pipe into the bell and donut. The replacement pipe shall have a sleeve coupling on the opposite end and shall be "folded in" until it is aligned with the existing spigot end. The sleeve coupling shall then be slid halfway back over the existing spigot and clamped securely in place. The new pipe shall be bedded and backfilled as specified. The new pipe shall be accurately cut to length so that the gap left, after fold in, is 1-in or less. As an alternative, the Contractor may omit the donut coupling and use two sleeve type couplings to connect replacement pipe with plain or cut ends to two existing plain or cut end pipes.

END OF SECTION

SECTION 02640

POINT REPAIRS TO SANITARY SEWER LINES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The work covered under this Section of the Specifications consists of furnishing all labor, supervision, equipment, appliances and materials, and performing all operations in connection with the point repair or replacement of existing sanitary sewer mains at the locations as indicated, and as directed by the Owner, complete in place and accepted, in accordance with the Drawings and Specifications.

B. The work shall include cutting, removal and replacement of existing pavement and pavement base; temporary and permanent pavement; replacement of unsuitable backfill material; trench excavation with sheeting, shoring and bracing of the trench as necessary and/or as directed; exposing the sewer for inspection and repair; replacing defective vitrified clay pipe with new vitrified clay pipe; tees; wyes and chimneys; compaction of all fill, backfill and subgrades; protection of existing pipelines, utilities, structures and work; dewatering, testing and all appurtenant work; maintaining existing sewer flows; and restoration of disturbed grass areas, sidewalks, and pavement.

C. The Contractor is required to perform television inspection prior to construction to verify the existing conditions and the exact location of each point repair.

1.02 RELATED SECTIONS

A. Maintenance of Flow in Existing Sewers is included in Section 01510.

B. Removal and Disposal of Existing Pipe, Manholes and Appurtenances are included in Section 02053.

C. Earth Excavation is included in Section 02200.

D. Granular Fill Materials are included in Section 02230.

E. Excavation Support Systems is included in Section 02160.

F. Cleaning and Television Inspection of Sewer Lines is included in Section 02610 an 02764.

G. Temporary and Permanent Paved Surface Restoration is included in Section 02510.

H. Sewer Testing and Cleaning is included in Section 02610.

I. Vitrified Clay Pipe is included in Section 02508. - NOT USED

J. Polyvinyl Chloride (PVC) Gravity Pipe is included in Section 02622.

K. Pipe Repair Couplings are included in Section 02628.

1.03 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.

1.04 DESIGN CONDITIONS

A. Point repairs shall conform to the requirements of the Specification and requirements of the other associated work.

B. A Point Repair is considered the replacement of sections of vitrified clay pipe. It is the intent under Point Repairs to replace damaged sections of vitrified clay pipe at locations as noted on the Drawings. During any operation associated with point repair, the work may be modified as deemed necessary or as directed by the Owner.

C. On all sewer lines in which a point repair is to be made, the normal flow of sewage shall be rerouted with the Owner's approval, by bypass pumping. Maintain sewage flow at all times.

D. The approximate location of point repairs has been made available on the Drawings. The Contractor shall undertake such investigations, as he deems necessary, to verify the location of point repairs including television inspection on that line segment prior to excavation at no additional expense to the Owner.

E. If the repair is for a service connection the pipe/service connection shall be replaced and the excavation backfilled in accordance with these Specifications. The Contractor shall be paid for such pipe replacement at the Contract unit prices bid for the point repair.

1.05 REFERENCES

A. ASTM Designation: C594, latest revision

PART 2 PRODUCTS

2.01 MATERIALS

A. The materials necessary for a point repair are shown on the drawings, as specified in the appropriate Sections of these Specifications.

2.02 JOINTS

A. When connecting the new pipe to the straight spigot end of the existing pipe, suitable flexible adapters shall be used for joining dissimilar materials or similar materials. The adapters shall be either the insert type or the stainless steel banded coupling type (Fernco couplings, Pipe Conx by Uniseal, or approved equal) and approved by the Owner. The adapter and band material shall be of materials, which pass the strength and chemical requirements of ASTM Designation: C594, latest revision. All banded maintenance couplings and adapters shall bear the manufacturer's identifying mark and size.

B. When connecting the new pipe to the bell end of existing sewer pipe a concrete encasement shall be used for joining dissimilar materials or similar materials. The concrete encasement shall cover the entire joint as detailed on the Drawings. The minimum length of replaced pipe with a bell end shall be 2 feet.

2.03 SEWER CONNECTIONS AND APPURTENANCES

A. Service Connections

1. Any service connection replaced during a point repair shall conform to these Specifications and applicable ASTM Specifications, for the materials and installation. Materials shall be Polyvinyl Chloride (PVC) Gravity Pipe as specified in Section 02622 and as shown on the Drawings.

PART 3 EXECUTION

3.01 GENERAL

A. The pipeline shall be excavated and exposed at the points of defects for the designated length of sewer section as recorded for inspection. All defective pipe located shall be uncovered so that the entire defect can be repaired or replaced and aligned into its final position in the profile. This work shall be accomplished in such a manner that the integrity of the pipe and joints is not destroyed.

B. Upon completion of the realignment and rehabilitation of the defect as described herein, it shall be tested. It is the intention of these Specifications that all rehabilitated or repaired pipelines be tested.

C. Removal of fences, base material, storm drains, etc., that interfere with point repair at designated locations will be restored or replaced to their original condition prior to beginning a new operation, at no additional expense to the Owner.

D. Replacement of and methods for bedding materials shall conform to the trench details shown on the contract drawings.

E. Repair or replacement of existing defective sewer pipe shall conform to the appropriate Sections of these Specifications.

F. Repair or replacement of leaking service connections, wyes, tees and saddles shall conform to the appropriate Sections of these Specifications.

G. Connect all newly constructed sewer pipe to existing sewer pipe, main sewer line and service lines, all in good condition, so that no possible source of infiltration/ inflow (a leak in the line) may be created. Any sewer pipe damaged by the Contractor shall be replaced or repaired at his/her expense.

END OF SECTION

SECTION 02654

REMOVAL OF PROTRUDING TAPS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all equipment, labor and materials necessary to internally remove protruding taps in those sewers scheduled to be rehabilitated by cured-in-place pipe lining.

B. Remove all taps that interfere with the cured-in-place lining.

C. Where possible, removal of protruding taps shall be completed before sewer line cleaning and TV inspection is conducted. Where this is not possible, the Contractor shall ensure that the sewer is clean of all dirt and debris before cured-in-place lining is begun.

D. The Contractor shall maintain wastewater flows, in accordance with Section 01510, at all times during performance of this work.

E. Dirt and debris caused by protruding tap removal shall not be allowed to enter the wastewater flow and be carried to downstream reaches.

1.02 RELATED WORK

A. Section 02677, Cured-in-Place Pipe Liner for Service Laterals

B. Section 02766, Cured-in-Place Pipe (CIPP) for Sewer Mains

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Protruding taps shall be removed using an internal, remote-controlled intruding pipe remover. Excavation and replacement of protruding taps will not be allowed except under special situations authorized in writing by the Engineer.

B. The equipment shall consist of a main body containing a rotating head assembly equipped with carbide cutting edges. The rotating cutting head shall be driven by air, water or by electricity and shall be capable of cutting concrete, vitrified clay pipe or other materials commonly used for pipe construction with the exception of cast iron or steel.

C. The equipment shall be pulled through the sewer using winches and a cable set

up between adjacent manholes.

D. If necessary, the equipment shall be accurately positioned using a TV camera in conjunction with the cutter assembly.

PART 3 - EXECUTION

3.01 PERFORMANCE

A. The Contractor shall remove all protruding taps from sewers to receive cured-in-place pipe lining.

B. The Contractor shall maintain a complete record of all taps that were removed, and furnish two (2) copies of this record to the Owner and Engineer.

1. The list shall show the date, sub-area, street, sewer reach (by manhole numbers), station and location (left, right or top) of each tap removed.

2. The list shall also show similar data for any taps that were not successfully removed, as well as the reason why removal was unsuccessful.

C. The Contractor shall protect existing sewer lines and service connections from damage caused by improper use of the equipment.

1. Damage to a sewer or service connection caused by removal of a tap shall be repaired immediately, as directed by the Engineer, at the Contractor's own expense.

D. The Contractor shall remove all dirt and debris from the sewer following completion of tap removal in that reach.

END OF SECTION

SECTION 02720

CATCH BASINS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this section shall consist of furnishing and installing Hartford Type "C" Catch Basin with granite curb backs to the lines and grades specified on the plans. Work shall include all excavation, removal, and proper disposal of existing catch basins and other surplus materials, trench support and stabilization, dewatering, handling of existing flows, placement of crushed stone base material under the proposed structure, furnishing, installation and/or construction of sump, walls, riser and curbed sections, connection on installation of existing and proposed pipes, installation of frames and grates, granite curb inlets, and replacement and/or resetting of adjacent sidewalk, curb, and pavement disturbed by this work.

1.02 RELATED WORK

A. SECTION 02053, REMOVAL AND DISPOSAL OF EXISTING SEWER AND APPURTENANCES

B. SECTION 02140, DEWATERING AND DRAINAGE

C. SECTION 02160, EXCAVATION SUPPORT SYSTEMS

D. SECTION 02200, EARTHWORK

E. SECTION 02202, SPECIAL TRENCH REFILL

1.03 REFERENCES

A. ASTM C139-73 (1989): Concrete Masonry Units for Construction of Catch Basins and Manholes

B. ASTM C32-73 (1989): Sewer and Manhole Brick (Made from Clay or Shale), (for Grade SS, Hard Brick)

C. ASTM C478-88: Precast Reinforced Concrete Manhole Sections

D. ASTM C207-79 (1988): Hydrated Lime for Masonry Purposes

E. ASTM A48-83 (1990): Gray Iron Castings

F. ASTM C159-89: Portland Cement

PART 2 - PRODUCTS

2.01 MATERIALS.

A. Catch basins shall conform in shape, size, dimensions, materials, and other respects to the details indicated on the drawings indicated on the drawings or bound in the specifications or as ordered by the Engineer.

B. Catch basin walls shall be precast concrete masonry units or constructed of concrete block and mortar. The top of the cone (not to exceed 6-in.) shall be built of brickwork to permit adjustment of the frame to meet the finished surface.

C. Catch basin sumps shall be one-piece precast concrete or concrete masonry units on cast-in-place or precast concrete bases.

D. The cast-iron frames and grates shall be the standard as indicated on the drawings.

E. All cast-in-place concrete shall be 3000 psi and shall conform to the requirements specified under Section 03300.

2.02 PRECAST CONCRETE MASONRY UNITS

A. Precast concrete masonry units shall be machine-made solid segments, conforming to ASTM Standard Specifications for Concrete Masonry Units for Construction of Catch Basins and Manholes, Designation C139-73 (1989), with the following exceptions and additional requirements:

1. Type II cement shall be used except as otherwise permitted.

2. The width of the units shall be as indicated on the drawings.

3. The inside and outside surfaces of the units shall be curved to the necessary radius and so designed that the interior surfaces of the structures shall be cylindrical, except the top batter courses shall be designed to reduce uniformly the inside section of the structure to the required size and shape at the top.

4. Units shall be designed such that only full-length units are required to lay any one course.

5. Acceptance of the units will be on the basis of material tests and inspection of the completed product.

6. The Contractor shall submit 6 sets of manufacturer's information to the Engineer for approval prior to delivery of any units to the project site.

7. The manufacturer's name and the date of manufacture shall be clearly marked on the units.

2.03 PRECAST CONCRETE SUMPS

A. Precast concrete sumps shall conform to the ASTM Standard Specifications for Precast Reinforced Concrete Manhole Sections, Designation C478-88, with the following exceptions and additional requirements:

1. The wall section shall be not less than 6-inch thick.

2. Type II cement shall be used except as otherwise permitted.

3. Sumps shall be cured by subjecting them to thoroughly saturated steam at a temperature between 100 and 130 deg. F. for a period of not less than 12 hours or, when necessary, for such additional time as may be needed to enable the sections to meet the strength requirements.
4. No more than two lift holes may be cast or drilled in each sump.

5. Acceptance of the sumps will be on the basis of material tests and inspection of the completed product.

B. All holes in sumps used for their handling shall be thoroughly plugged with rubber plugs made specifically for this purpose or with mortar. The mortar shall be one part cement to 1½ parts sand, mixed slightly damp to the touch (just short of "balling"), hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

2.04 BRICKS

A. The brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer. Brick shall conform to ASTM Standard Specifications for Sewer and Manhole Brick (made from Clay or Shale), Designation C32-73 (1989), for Grade SS, hard brick, except that the mean of five tests for absorption shall not exceed 8 percent by weight.

B. Rejected brick shall be immediately removed from the work site.

2.05 MORTAR FOR BRICKWORK

A. The mortar shall be composed of Portland cement, hydrated lime, and sand, in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime. The proportions of cement and lime shall be as directed and may vary from 1:1/4 for dense, hard-burned brick to 1:3/4 for softer brick. In general, mortar for Grade SS Brick shall be mixed in the proportions of 1-1/2:4-1/2.

B. Cement shall be Type II Portland cement conforming to the ASTM Standard Specification for Portland Cement, Designation C-150-89.

C. Hydrated lime shall be Type S conforming to the ASTM Standard Specification for Hydrated Lime for Masonry Purposes, Designation C207-79 (1988).

D. The sand shall comply with the specifications for fine aggregate, specified in Section 03300, except that ll of the sand shall pass a No. 8 sieve.

2.06 MORTAR FOR MASONRY UNITS

A. The mortar shall be composed of one part Portland cement and two parts of sand by volume with sufficient water to form a workable mixture. Cement and sand shall be as specified for mortar for brickwork.

2.07 CATCH BASIN FRAMES AND GRATES

A. The Contractor shall furnish and install all cast-iron catch basin frames and grates conforming to the details indicated on the drawings and as specified.

B. Castings shall be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sandholes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of grates and frame seats shall be machined to prevent cocking of grates.

C. All castings shall be thoroughly cleaned and subject to a careful hammer inspection.

D. Castings shall be at least Class 25 conforming to the ASTM Standard Specifications for Gray Iron Castings, Designation A48-83 (1990).

E. Before being shipped from the foundry, castings shall be given one coat of coal-tar pitch varnish, applied in a satisfactory manner so as to make a smooth coating, tough, tenacious, and not brittle nor with any tendency to scale off.

F. Unless otherwise specified or indicated on the drawings, castings in paved areas shall be capable of withstanding AASHO H-20 loading and shall meet the requirements of the municipality in which they are installed.

2.08 CURB INLETS

A. Granite for curb inlets shall have a horizontal bed and the top shall be free from seams, cracks and evidence of weakening or disintegration. The stone shall be sawn or peen hammered on top, and the front and back edges shall be pitched true to line. The back face for a distance of 3-inch down from the top shall have no projection greater than 1-inch. The front face shall be straight split, free from drill holes, and it shall have no projection greater than 1-inch or depression greater than 1/2 inch for a distance of 10-inch down from the top, and for the remaining distance there shall be no depression or projection greater than 1-inch. The ends shall be squared with the top for the depth of the face finish and so cut that the curb inlet can be set with joints of not more than 1/2 inch.

B. Granite curb inlet shall be 6 ft. in length, plus or minus 1/2 inch, 20 inches in depth, 7-inch wide at the top and at least 7-inch wide at the bottom.

C. A gutter mouth at least 3 inches in depth and 32 inches in length shall be cut in the front face of the stone as shown on the plans.

D. Where curb inlets are used to replace a section of existing curbing, the width of the curb inlet shall be the same as the adjoining existing curbing.

PART 3 - EXECUTION

3.01 EXCAVATION

A. The pavement around the existing catch basin shall be sawcut, jack hammered or otherwise cut to limit the amount damaged by excavation and removal of the existing structure. The existing cast iron frames and grates shall be carefully removed, if in good condition, the frames and grates shall be transported to the Metropolitan District Yard at 125 Maxim Road and unloaded by the Contractor at no additional cost to the District. The remainder of the structure shall be removed by excavation and properly disposed. The volume of excavation shall be large enough to allow installation of the trench wall support necessary and also allow adequate room for proper construction of the catch basin to the lines and grades indicated on the plans and to allow for inspection of the structure.

B. Handling of existing flows shall conform to Section 02721 subsection 3.10.

C. The catch basin sumps shall be set on a minimum base of 6" of 3/4" crushed stone. The catch basin sumps shall be a precast unit or constructed of concrete block on a cast-in-place or precast concrete base.

D. The walls of the catch basins may be constructed of precast concrete units or of concrete block and mortar. The Contractor is herewith advised that the proximity of adjacent utilities may dictate the type of construction necessary for the sump and the walls of the catch basins. No additional payment shall be made for changes in the type of construction required due to adjacent utilities.

E. If concrete block is used, it shall not be laid when the air temperature in the shade or away from artificial heat is 40 degrees F or below and falling. The concrete block shall be laid in such a manner as to thoroughly bond with the mortar.

F. All joints shall be completely filled with mortar. They shall be not less than 1/4 inch and not more than 1/2 inch in thickness, and the thickness shall be uniform throughout. All joints shall be finished properly as the work progresses, and on exposed faces, they shall be neatly struck, using the "weather joint."

G. The top six inches or as shown on the drawings, of catch basins shall be built of brick.

H. All cutting of existing masonry will be confined to the minimum necessary for installation of new pipes or construction of new inverts. Brick or blocks shall be cut out to the nearest joint. Pipes shall be cut flush with the walls and the space between the wall and pipe completely filled with mortar.

I. Bricks shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

J. Each brick shall be laid as a header in a full bed and joint of mortar without requiring subsequent grouting, flushing or filling, and shall be thoroughly bonded as directed.

K. The outside faces of block and concrete block masonry shall be plastered with mortar from 1/4" to 3/8" thick. If required, the masonry shall be properly moistened prior to application of the mortar. The mortar shall be carefully spread and trowelled. After hardening, the plaster shall be carefully checked for bond and soundness by tapping. Unbound or unsound mortar shall be removed and replaced.

L. Brick masonry and plaster shall be protected from too rapid drying by the use of burlaps kept moist, or by other acceptable means, and shall be protected from the weather and frost, all as required.

M. All concrete, (including bases) brickwork and masonry of catch basins and manholes to be removed shall be completely removed and shall be properly

disposed of. No materials removed from catch basins or manholes shall be used as backfill.

N. Except as otherwise indicated or ordered there shall be at the top of each catch basin a frame and grate or cover set to a full even bearing on cement mortar or the required line and grade.

O. The Contractor shall not backfill around any catch basins until the masonry has set for 72 hours or until directed by the Engineer. The Contractor shall not permit any wheel load on any catch basins until permission is granted by the Engineer.

P. Grates shall be left in place in the frames, for safety reasons, except while work is being performed.

Q. The void around the newly constructed catch basin shall be filled and compacted with suitable material. If native material is unacceptable for backfill, material meeting the requirements of Section 02702 Special Trench refill shall be used.

END OF SECTION

SECTION 02721

LAYING SEWER AND DRAIN PIPE, GENERAL

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This Section specifies the laying of sanitary sewer drain piping.

B. The Contractor shall furnish and install sanitary sewer drain piping and service connection piping to the lines and grades and in the locations indicated on the Contract Drawings and/or as ordered by the Engineer.

C. Installation shall include but not be limited to, all necessary equipment and materials required for the completed pipeline, including foundation, earth excavation, rock excavation, traffic control, dewatering, test pits, trench stabilization and support, and protection of existing utilities, facilities, structures, fittings, bedding, temporary and permanent reconnection of existing house connection laterals to new sewers or drains, support and protection of crossing utilities, installation of piping in tunneled portions of work, backfilling, trench compaction, utility detection tape, filter fabric envelope, temporary and permanent surface restoration, handling of sewage/storm/combined flows and removal and disposal of existing sewers, manholes and appurtenances and bulkheading and grout filling of same.

1.02 RELATED SECTIONS

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES

B. SECTION 01570, TRAFFIC REGULATIONS AND TRAFFIC CONTROL

C. SECTION 02011, TEST PITS

D. SECTION 02053, REMOVAL AND DISPOSAL OF EXISTING SEWERS, MANHOLES AND APPURTENANCES

E. SECTION 02140, DEWATERING AND DRAINAGE

F. SECTION 02145, HANDLING CONTAMINATD GROUNDWATER

G. SECTION 02150, BYPASS PUMPING HANDLING RUNOFF AND SANITARY SEWAGE FLOWS

H. SECTION 02160, EXCAVATION SUPPORT SYSTEMS

I. SECTION 02200, EARTHWORK

J. SECTION 02202, SPECIAL TRENCH REFILL

K. SECTION 02230, GRANULAR MATERIALS

L. SECTION 02508, VITRIFIED CLAY SERWER PIPE - NOT USED

M. SECTION 02510, TEMPORARY AND PERMANENT PAVED SURFACE RESTORATION

N. SECTION 02612, REINFORCED CONCRETE PIPE

O. SECTION 02622, POLYVINYL CHLORIDE SEWER PIPE

P. SECTION 02640, POINT REPAIRS TO SANITARY PIPE

Q. SECTION 02905, UNPAVED SURFACE RESTORATION AND RESET MISCELLANEOUS ITEMS

1.03 REFERENCES (latest revisions)

The Metropolitan District Standards (MDC)

The Metropolitan District's, "Sanitary Sewer-Storm Drain Connection Manual," latest revision.

MDC Standards Plan No. 62-216, Typical Trench Cross-Section Showing Crushed Stone Foundation and Haunching and Backfill

MDC Standards Plan No. 62-215, Typical Connection Branches

MDC Standards Plan No. 62-218, Typical Foundation Sections in Soft or Wet Material

American Society for Testing & Materials (ASTM)

ASTM D-3034	Type PSM Poly (Vinyl Chloride) (PVC) sewer pipe and Fittings, Designation SDR-35 (6, 8, 10, 12, and 15-inch)
ASTM F-789	Type PS-46 Poly (Vinyl Chloride) (PVC) Plastic Gravity Flow Sewer Pipe and Fitting (6, 8, 10, 12, and 15-inch)
ASTM A-746	Ductile Iron Gravity Flow Sewer Pipe, Class 52.

1.04 SUBMITTALS

A. Submit in accordance with Section 01300.

B. The Contractor shall provide the following:

1. Name and address of materials (pipe, Manhole, etc.) suppliers and manufacturers.

2. Name and address of Sub-Contractors for Engineer's approval.

3. Guarantees and warranties of products to be installed on the project.

4. Technical information for Engineer's approval of alternate methods and materials.

5. Detailed description of the methods to be used to maintain, handle, and divert sanitary/storm/combined sewage flows, as specified in paragraph 3.04. Include in detail all methods, procedures, equipment and materials to maintain flows. Include technical data on all equipment. Include plans of the layout of equipment at each location.

1.05 QUALITY ASSURANCE

A. Product test reports, certificates and manufacturer's field reports and instructions are to be provided.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery, storage and handling of plastic (PVC) pipe shall conform with the requirements of Section 02622.

B. Delivery, storage and handling of reinforced concrete pipe (RCP) pipe shall conform with the requirements of Section 02612.

C. In general, material storage at the site will not be permitted. Materials shall be protected from the weather, project operations and any other potential cause of damage and shall not be a hazard to or interfere with the safe operations of the project, traffic and safety of the workmen and general public.

PART 2 - PRODUCT

2.01 MATERIALS

A. Foundation, base, haunching, backfill and bedding shall be as shown on the Drawings and as specified in Sections 02202 and 02200.

B. Filter fabric shall have an effective opening size of 70 µm.

C. Utility Detection Tape:

1. The tape shall be as specified in Section 02317.

2. The tape shall be designed to withstand extended underground exposure.

3. The tape shall be 6 inches in width.

4. The tape shall be colored green and be durably imprinted with an appropriate warning indicating the presence of the buried pipe: "Caution Buried Sewer Line Below" or "Caution Buried Storm Drain Line Below".

D. Temporary surface in paved areas shall consist of hot bituminous concrete mix as specified in Section 02510.

E. Permanent surface in paved areas shall be bituminous concrete and/or concrete or pre-mix material as approved by the appropriate authority and as specified or ordered by the Engineer, in accordance with Section 02510.

F. Temporary and permanent unpaved surface restoration materials shall conform to the requirements of Section 02905.

G. Sanitary Sewer Piping. Refer to Sections 02508, 02610, 02622, and 2764 for specific requirements.

PART 3 - EXECUTION

3.01 EXECUTION

A. Each length of pipe shall be examined to see that it is sound and free of hairline cracks, free of any debris and retains it's normal shape (not out of round).

B. When ordered by the Engineer, the Contractor shall provide for and complete manufacturer's certification test.

3.02 INSTALLATION

A. The program of earthwork, rock excavation, dewatering, traffic control, support of excavation, environmental protection, backfilling and compacting, handling sanitary sewage and storm water flows, etc., shall be done in accordance with the applicable Sections of the Contract Documents.

B. Removal and disposal of existing sewer and appurtenances shall be done in accord with Section 02053. Handling of storm runoff and combined/sanitary sewage flows shall be done in accordance with paragraph 3.04 of this Section.

C. Where and as shown on the Contract Drawings, the Contractor will be required to remove and relay portions of existing sanitary or storm house connection laterals, in conjunction with the installation of new sanitary sewers and storm drains. At certain other locations, District forces will be required to offset water services affected by the construction. At certain other locations other utility owners will be performing utility relocation work. The Contractor shall coordinate his scheduling of work of said utility owners.

D. Pipe shall be installed in accordance with applicable pipe section of these Specifications.

E. Pipe shall be laid in a dry trench on a minimum of 6-inches of ¾" crushed stone base at the grade specified with ¾" stone haunching up the sides to level with top of all plastic pipe size 15-inch and less and other pipes size 18-inches and up to the spring line of larger plastic and reinforced concrete piping, unless otherwise ordered by the Engineer and adequately hand tamped around all type and size pipes. Bell holes shall be made in the ¾" stone bedding to ensure that all pipe is firmly supported on the entire barrel portion. Filter fabric shall be installed as shown on the design drawing.

F. Pipe shall be connected at joints with the use of a push-on integral rubber gasket on all plastic and reinforced concrete pipe conforming with the designated ASTM specifications.

G. Wyes, bends, inlets, tees, chimneys, etc., shall be installed as shown or directed in the pipeline. The Contractor shall have a sufficient quantity of fittings on hand that can be installed as required around existing utilities as directed by the Engineer.

H. Existing house connection laterals (sanitary and storm) shall be temporarily reconnected to the new sanitary sewer or storm drain until such time as the permanent connection can be made.

I. Backfill material shall be placed in lifts as specified in Section 02200 and compacted in the full width and length of the trench up to the approved height above the pipe and below the surface to be paved as specified.

J. Trench stabilization and support systems shall be used for all installation work and shall conform with OSHA regulations. Where indicated on the Drawings and as specified or ordered by the Engineer, the excavation support system shall be installed and either be removed or left in-place, as determined by the Engineer.

K. Concrete trench plugs shall be placed at the locations shown on the Contract Drawings. Backfill shall be placed evenly on each side of the trench plug.

3.03 FIELD QUALITY CONTROL

A. Low pressure air tests and television inspections shall be performed by the Contractor in accordance with the requirements of Section 02610 and 02764.

B. The Contractor shall also assist the District's Inspector in the monitoring of such tests and in the inspection and measurements to ensure the quality of the installed system.

3.04 HANDLING STORM RUNOFF AND SANITARY SEWAGE FLOWS

A. The Contractor shall furnish, install, construct, operate and maintain temporary facilities such as pipes, structures, flow diversions, pumping equipment, bypasses and other protective facilities that are necessary for the proper conveyance, without interruption, of storm runoff and sanitary sewage flows through the limits of work during the construction, reconstruction or relocation of new and existing sanitary sewers, storm drains, house connections and manholes throughout the period of time in which the work occurs.

B. The Contractor shall handle both dry and wet weather flows, regardless of source of quantity of flow, and the protection of existing structures, utilities, etc., and any or all of the finished construction during dry or wet weather flows. The Contractor shall remove and dispose of all such temporary facilities upon the completion of the permanent work.

C. All materials shall conform to the requirements of the applicable items of these specifications and be subject to the approval of the Engineer.

D. In general, the pertinent provisions of the Contract Specifications shall govern the construction methods and procedures to be utilized by the Contractor for the work specified in this Section.

E. The Contractor shall investigate and verify sanitary sewer flows to evaluate the scope of facilities required for the proper conveyance and maintenance of said flows.

F. Sanitary flows may be bypassed to the parallel combined sewer on any street in this Contract provided the Contractor receives the prior written approval of the

Engineer. The combined sewers may overflow during wet weather or high flow conditions and for this reason, flow conditions in both the sanitary pipe and combined sewer pipe must be closely observed to ensure that bypassing of sanitary flows to the combined sewer will not exacerbate surface water pollution at downstream locations.

1. If the Contractor chooses to bypass to the combined sewer, the Contractor shall demonstrate to the satisfaction of the Engineer that bypassing in this manner will not contribute to surface water pollution at downstream locations.

2. In general, bypassing to the combined sewer will not be allowed during non-working hours as weather conditions and flow rates in these pipes can change rapidly.

G. The Contractor shall furnish the Engineer with his proposed detailing methods, procedures, equipment and materials to maintain flows and accomplish the work as described herein. The Contractor alone shall be responsible for the safety of the work, the protection of any facilities, utilities or adjoining properties, and for the successful completion of the work under this item.

H. The Contractor is hereby notified that due to the age and condition of the existing sewer systems, the flows in said systems may increase during storms or wet weather in general. All flows, regardless of source or quantity, must be maintained in an acceptable manner, so as not to overflow, backup or otherwise create a nuisance or health hazards, or in any way endanger adjoining properties or facilities.

I. To this end, the Contractor shall furnish, install or construct temporary facilities, connections or structures as necessary to convey and maintain the aforementioned flows during the prosecution of the work under this Contact. All such temporary facilities, structures or connections shall be designed and constructed to permit excavation for permanent work to the payment limits shown on the Contract Drawings. Failures of such temporary facilities which endanger or prevent proper completion of permanent work shall be corrected at the sole expense of the Contractor.

J. The Contractor shall provide, install, operate and maintain all temporary facilities such as pumping equipment and hoses, conduit, etc. to intercept flows before said flows reach points where they would interfere with the Contractor's work, to bypass the flows beyond the point of immediate construction and to return them to the drainage system of origination below said systems. The Contractor shall have on hand throughout the work such auxiliary pumping equipment, generators, etc., necessary to maintain flows in the event his primary equipment fails.

K. The Contractor shall divert flows as necessary to construct or reconstruct inverts, benching, or other portions of manholes or chambers as indicated on the Contract Drawings, or as directed by the Engineer.

L. The Contractor shall make temporary connections to keep all house connections laterals, utility lateral connections and storm connections in service, where said connections are encountered during the course of excavation for the proposed facilities. In the event said connections are removed by the Contractor for his convenience to facilitate the installation of proposed facilities, the Contractor shall make temporary reconnections as directed by the Engineer, until such time permanent repairs to the connections can be accomplished.

M. Unless otherwise provided for, or directed, all temporary facilities shall be bulkheaded and/or removed and disposed of in an approved manner when no longer required.

N. The Contractor shall have no claim for additional compensation by reason of any delay or inconvenience in adapting his operations to the requirement for maintaining and conveying sanitary sewage flows.

O. No claim will be allowed for any delay, loss or expense to which the Contractor may become subject, directly to indirectly, by reason of the normal or wet weather flows in existing sanitary sewers or by reason of any damage to the existing sewers caused by his operations.

P. The Contractor shall in no way or manner anticipate any additional compensation for work performed in the removal and/or sand or grout filling of the existing sewer system. Additional costs, if any, shall be included in the appropriate bid items of this Proposal.

3.05 REMOVAL AND DISPOSAL OF EXISTING SEWERS AND MANHOLES

A. See Section 02053.

3.06 UNDERGROUND UTILITY MARKING

A. Warning Tape - See Section 02317.

END OF SECTION

SECTION 02764

TELEVISION INSPECTION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The term “sewer”, as used in this Section, shall apply to both stormwater pipelines and sewer pipelines.

B. Where shown on the Drawings, or directed by the Engineer, furnish all necessary labor, materials, equipment, services and incidentals required and visually inspect by means of color closed-circuit television all new and existing sewer and drain sections, including, but not limited to, all recording and playback equipment, materials and supplies such as tape or disk.

C. The inspection shall be done one sewer line section (i.e., manhole to manhole) at a time.

D. All inspections shall be witnessed by the Engineer.

E. Video recordings shall be made of the television inspections and copies of both the recordings and printed inspection logs shall be supplied to the District.

F. The work specified in this Section shall be performed upon completion of the construction of the sanitary sewer, storm drains and appurtenances and then again at the end of the maintenance period, subsequent to trench consolidation and testing operations.

1.02 RELATED WORK

A. Sewer Testing and Cleaning is included in Section 02610.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. The television camera used for the inspection shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The camera shall be operative in 100 percent humidity conditions. The camera, television monitor and other components of the video system shall be capable of producing a minimum 500-line resolution video picture. Picture quality and definition shall be to the satisfaction of the Engineer and if unsatisfactory, equipment shall be removed and no payment made for an unsatisfactory inspection.

PART 3 - EXECUTION

3.01 PROCEDURE

A. The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to ensure proper documentation of the sewer's condition but in no case will the television camera be pulled at a speed greater than 30 fpm. Manual winches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. If, during the inspection operation, the television camera will not pass through the entire sewer line section, the equipment shall be removed and repositioned in a manner so that the inspection can be performed from the opposite manhole.

B. Whenever non-remote powered and controlled winches are used to pull the television camera through the line, telephones, radios, or other suitable means of communication shall be set up between the two manholes of the sewer line being inspected to ensure that good communications exist between members of the crew.

C. The accuracy of the measurements cannot be stressed too strongly. Measurement for location of defects shall be above ground by means of a meter device. Marking on cable, or the like, which would require interpolation for depth of manhole, shall not be allowed. Measurement meters shall be accurate to two-tenths of a foot over the length of the sewer line section being inspected. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device.

3.02 RECORDING OF FIELD OBSERVATIONS

A. General

1. The Contractor shall submit to the Engineer, two copies of digital recordings (images and video) of the pipeline television inspections and summary data in CDR (Write-Once CD) or DVDR format. The CDR shall be written in accordance with the ISO-9660 Level 2 specification. Each CDR shall be labeled with the appropriate identification of its contents. The label shall correspond to a schedule of every sewer reach contained on the CDR.

2. The digital recordings shall be linked to software capable of performing multiple summaries, queries, and analysis. The software shall also have the capability of recording, digitizing and storing single frames of video images and full time live video, as well as collecting, storing and printing pipeline inspection data for display and report generation.

3. The included software package shall be a 32 bit Windows 98/NT application and shall be fully Object Oriented. It shall be capable of printing pipeline inspection reports with captured images of defects or other related significant visual information on a standard inkjet color printer. The software shall also have the capability of being linked with graphical software such as those used for Geographical Information Systems.

B. Field Data Recordings

1. Image Capture

a. Create still shots of video recordings. Selected digitized picture images shall be stored and the picture files shall be exportable to Industry Standard Formats to include JPEG, BMP, TIFF, formats and are transferable by disk to an external personal computer that utilizes standard viewers and printers. Picture files will be stored and exported with inspection data.

2. Video Capture

a. Full time live video and audio files shall be captured for each pipe inspected. The files shall be stored in industry standard MPEG (Moving Pictures Expert Group) format and can be transferable by CDR media or DVDR to an external personal computer that utilizes standard MPEG viewers. The MPEG video shall be defined as ISO-MPEG Level 1 (MPEG-1) coding with a resolution of 352-pixel (x) by 240-pixel (y) and an encoded frame rate of 29.97 frames per second.

b. System shall perform an automatic disk image/file naming structure to allow saved video/data sections to be “Burned” to CDR or DVDR format. It shall have the capability of “burning” a minimum of 45 minutes of video to the CDR media with full “Linked” pipeline data information.

c. The video recording shall be free of electrical interference and shall produce a clear and stable image. The audio recording shall be sufficiently free of background and electrical noise as to produce an oral report that is clear and discernable.

d. The recordings shall identify the location both within the pipe segment (physical location) and within the digital recording (video frame location) for each defect or observation. The digital recordings and inspection data shall be cross-referenced to allow instant access to any point of interest within the digital recording. A user defined, pipeline search mechanism shall be provided.

e. The video inspection shall include segment information (start and ending manholes, station footage, date, time, client, address, etc.). A pointer

shall be provided from each observation to the digital recording and any accompanying digital still images.

3. Data Base

a. Develop a summary log of each sewer reach inspected. The system software shall be an MS Windows 98/NT based data acquisition system incorporating an ODBC windows standard data base format. Inspection files shall be able to be exported into other databases and other computers. Information on software file headers format shall be provided to allow the inspection database to be customized with the correct headers into the users unique application or software. The defect codes shall include standard defect codes and user defined codes. Defect severity codes shall include standard codes and user defined codes. There shall be graphical and tabular reports showing all observation points and pertinent data. All graphic and tabular reports shall be in color to match the defect severity codes. Inspection information shall be stored in a rational database management system that employs relationships to increase data integrity and reduce storage space.

b. System shall have the capability of being customized to meet local area requirements and regulations as necessary. These available changes shall encompass variations of the operation layout, functions and printed reports. The program shall be capable of sorting all data stored using generic sort key and user defined sort fields.

END OF SECTION

SECTION 02766

CURED-IN-PLACE PIPE (CIPP) FOR SEWER MAINS

PART 1 GENERAL

1.01 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 including cleaning; removal and disposal of debris; television inspection; performing sample testing; lining existing sanitary sewer lines; reconnecting active building connections; removing protruding taps by remote methods; stopping active leaks that might interfere with the integrity of the liner to be installed; providing water; complete and accepted, in accordance with the Drawings, details and Specifications.

B. Information relative to the GIS Identification numbers, pipe sizes, pipe materials, and pipe lengths have been provided in the tables located on the Drawings.

C. Removal and replacement of fences, repair to yards, lawns, sidewalks, driveways, and other public or private property, due to actions or processes related to the work being performed shall be included in the cost of the Work.

D. The Contractor, or Subcontractor performing the Work, shall not change any material, design values or procedural matters stated or approved herein, without informing the Owner and receiving written approval of the change. Such changes constitute a breech of contract and shall result in rejection and removal of work done with the unapproved materials or processes at no cost to the Owner.

E. Maintenance and Protection of Traffic, confined space entry, and work site protection shall be the responsibility of the Contractor and costs of these items are included in the cost of the project. The Contractor shall notify Police, Fire and Ambulance agencies in advance of any and all road closures. The Contractor shall comply with applicable OSHA trench safety rules.

F. The Contractor shall comply with the Owner’s Water Usage Procedures, as defined in Section01046, paragraph 1.07.

1.02 RELATED SECTION

A. Maintenance of Flow in Existing Sewers is included in Section 01510.

B. Cleaning and Television Inspection of Sanitary Sewer Lines is included in Section 02610 and 02764.

C. Point Repairs to Sanitary Sewer Lines is included in Section 02640.

D. Removal of Protruding Taps is included in Section 02654.

E. Pressure Testing and Joint Sealing of Sanitary Sewer Building Laterals is included in Section 02568.

1.03 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.

B. The Bidder/Contractor shall submit to Owner in writing the information below prior to or at the time indicated. Failure to do so will prevent progression of the work to the next step.

Submittal Item	**Time of Submittal**
CIPP System Data (2.04)	After Award
Design Calculations (2.04)	After Award
Manufacturers Resin Data Test Results (2.03).....	With Bid Documents
Resin Enhancer Manufacturers Data (2.03)	With Bid Documents
Certification of Applicability of Resin (2.03)	With Bid Documents
Experience Record of Contractor (1.04).....	With Bid Documents
List of Sub-Contractors with Experience (1.02).....	With Bid Documents
Locations of Additional Access Points.....	At Pre-Construction Conference
Installation Plan/Diversion Pumping Plan (including emergency plans)(3.03).....	At Pre-Construction Conference
*Pre/Post-Installation Video Inspection Tape.....	***Within 7 days of Completion***
Installation and Resin Curing Schedule	Before Installation of Tube
Time Log Sheets and Tap Cut Sheets.....	After compl of <u>each</u> crew day
Copies of Quality Control Tests.....	After compl of <u>each</u> crew day
CIPP Repair Methods (if required).....	Before repairs are made
Point Repair Methods (if required).....	Before repairs are made
Daily Logs, Weekly Time Sheets.....	Weekly
Physical Samples.....	As requested/required
Temperature and Cook Logs	Avail for Inspector review

1. If Pre and Post Inspections are combined onto one hard copy, submit copy after completion of each section lined per the schedule above described. Request may be made to include more than one segment to a hard copy in order to maximize use.

   Samples removed for testing will be individually labeled and logged to record the following:

   a. Owner's project number and title
   b. Sample number
   c. Segment number of line as noted on plans
   d. Date and time of sample
   e. Name of Contractor
   f. Date, location, and by whom tested
   g. Results of the test

2. Samples shall be taken once (1) in every five (5) runs or at the Owner's request and numbered as follows:

   Sample #/A: resin sample

   Sample #/B: flat plate sample

   Sample #/C: upstream thickness test

   Sample #/D: downstream thickness test

   Additional samples will be lettered consecutively after "D".

   Updated copies of the log shall be submitted to the Owner after each Crew-day is completed.

3. Report Format and Labeling

   a. Reports shall be submitted on 8-1/2" x 11" paper. Larger drawings shall be folded to this format. Submittals shall be stamped by Contractor to indicate Contractor, date of submittal, Owner's project title and number, applicable section of specifications to be referenced, and signature of preparer.

   b. Video DVDs shall be submitted in a clear snap-top type plastic protective box, labeled to indicate Owner's project number and name, date of video inspection, segment number of line, Contractor's name, and whether pre-installation or final inspection video tape (or both). Video DVDs and boxes shall be labeled.

1.04 QUALITY ASSURANCE

A. CONTRACTOR EXPERIENCE AND LINER SYSTEM APPROVAL

1. The Contractor shall have successfully managed and completed cured-in-place pipe (CIPP) rehabilitation projects on lines sizes defined in the bid documents in the United States within the last three (3) years previous to bid date. Alternatively, the Contractor may install a Qualification Project as defined by the Owner using the same system to be proposed/installed under this Specification prior to bidding on a particular project. Terms, conditions, and test results set forth in this Specification apply and shall be met by the Qualification Project. Because of the uniqueness of individual systems, Contractors, and products, the Owner reserves the sole right to determine approval/disapproval of a system or product for any/all reasons based on a Qualification Project. The testing shall be paid for by the Contractor and conducted at a testing laboratory of the Owner's designation.

2. The Superintendent-in-Charge of the installation shall have a minimum of five (5) years experience prior to bid date overseeing the installation of CIPP sewer lines in the United States. Jointly, the Contractor and the Superintendent-in-Charge shall have successfully installed 100,000 lineal feet of sewer liner in the United States prior to the bid date. Should the Superintendent-in-Charge be replaced during the contract for any reason, the new Superintendent-in-Charge shall have experience equal to or greater than the original Superintendent-in-Charge and be approved in advance by the Owner.

3. For a product to be considered commercially proven, a minimum of 250,000 lineal feet or 1,000 manhole-to-manhole line sections of successful wastewater collection system installations in the U.S. must be documented to the satisfaction of the Owner to assure commercial viability. In addition, at least 25,000 lineal feet of the product shall have been in successful service for a minimum of 3 years.

4. Linear Design Calculations shall be stamped by a Registered Professional Engineer licensed by the State of Connecticut. Design Calculations shall be submitted as described in Section 1.03.

B. WARRANTY

1. The liner shall be guaranteed against excessive infiltration, static loading and live loading as determined by using the modified AASTHO H-20 loading for a period of two years from the date of final acceptance.

1.05 REFERENCES

A. Whenever reference is made to the "Form 816" in these Specifications, it shall refer to "State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 816", and its latest supplements and revisions.

B. When reference is made to a particular section of "Form 816", it will be construed to include all related articles referred to in said section.

C. AASHTO Standard Specification for Highway Bridges.

D. ASTM C581 - Standard Practice for Determining Chemical Resistance of thermosetting resins used in glass fiber reinforced structures, intended for liquid service.

E. ASTM D543 - Test Method for resistance of plastics to chemical reagents.

F. ASTM D790 - Test Method(s) for flexural properties of unreinforced and reinforced plastics and electrical insulating materials.

G. ASTM F1216 (including Appendix XI) - Standard practice for rehabilitation of existing pipelines and conduits by the inversion and curing of a resin-impregnated tube.

H. ASTM F1743-96 - Rehabilitation of existing pipelines and conduits by pulled-in-place installation of cured-in-place thermo-setting resin pipe (CIPP).

I. ASTM D3567 - Standard practice for determining dimensions of reinforced thermosetting resin pipe (RTRP) and fittings.

PART 2 PRODUCTS

2.01 TELEVISING EQUIPMENT

A. The Mobile Unit and Video Equipment shall be as defined in Section 02764 - Cleaning and Television Inspection of Sewer Lines.

2.02 CARRIER TUBES

A. The tube shall be fabricated to a size that when installed will neatly fit the internal circumference of the conduit specified by the Owner. Allowance shall be made for circumference stretching during insertion. Folds or abnormal wrinkles in the tube after installation will not be acceptable.

B. The minimum length shall be that deemed necessary by the Contractor to effectively span the distance from the inlet to the outlet of the respective manholes unless otherwise specified. The Contractor shall verify the length in the field before impregnation.

C. Unless otherwise specified, the Contractor shall furnish a general purpose, unsaturated, polyester resin and catalyst system compatible with the utilized process that provides cured physical strengths specified herein.

D. The liner shall have a uniform thickness that when compressed at installation pressures will meet or exceed the design thickness.

E. An "inner liner" or "outer liner" film used for resin control which will remain a permanent part of the system may be used provided the liner film is made an integral part of the carrier tube by bonding or fusing to the carrier tube.

F. The wall color of the interior pipe surface of the CIPP after installation shall not be of a dark or non-reflective nature that could inhibit proper closed circuit television inspection.

G. The tube shall contain no intermediate or encapsulated elastomeric layers. No materials that are subject to delamination in the cured state shall be included in the tube.

H. If glass fiber reinforcement is used in the tube, there must be layers of unreinforced, resin absorbent material on the inside and outside of the tube to protect the fibers from being exposed to the pipe flow and external water.

I. Any plastic coatings on the tube that will become the inside surface of the finished CIPP shall be a translucent flexible material that is compatible with the resin system used and be fully bonded to the absorbent tube material.

J. Sewing of pieces of the liner together to form the length desired for a particular run will not be allowed without the approval of the Owner. In no case will multiple felt liners be allowed to be sewn together in a single run.

K. Holes made in the felt liner during the wet out process or for whatever other reason shall be identified with an identifiable marker and repaired before delivery to the job site. Puncture marks or tears must be brought to the Owner’s attention for approval before insertion into the sewer line.

2.03 RESINS

A. Acceptable Resin Types:

1. Polyester

2. Vinylester

3. Epoxy

B. Resin Definitions and Physical Characteristics

1. The liquid thermosetting resin used in this rehabilitation project shall produce a properly cured tube which will be resistant to abrasion caused by solids, grit, and/or sand. The cured tube shall also be resistant to corrosion due to acids and gases such as sulfuric acid, carbonic acid, hydrogen sulfide, methane, and carbon monoxide. The resin selected shall have proven resistance to municipal sewage.

2. Relevant information from the Contractor, resin manufacturer, or process licensee shall include, but may not be limited to, the following: specifications, characteristics and properties, ASTM C-581 test results, and methods of application. This data shall be submitted to the Owner per Section 1.03 Submittals prior to rehabilitation of the existing pipe. The Contractor shall also submit with the data a written certification from the resin manufacturer that the resin material to be used is compatible with the proposed application. Said certification shall also address curing temperature and curing schedule (i.e., duration of the temperature at all stages of curing). The curing schedule may be extended for longer cure times due to weather conditions, but shall not be accelerated (shortened) for any reason. The Contractor is hereby notified that his/her field installation practices will be checked against the aforementioned certification. (See Section 2.04.B Testing.) No variance shall be allowed without prior written approval of the Owner.

3. Bidder shall submit on 8-1/2" X 11" format paper an infrared spectrography chemical fingerprint of resin used with the bid document. (See Section 1.03 Submittals.)

C. The resin system to be used shall be manufactured by an approved company selected by the Cured-In-Place process manufacturer. Only corrosion resistant polyester, vinylester and epoxy resins complying with the following definitions shall be used:

1. Polyester Resin

a. A resin created by condensation reactions between isophthalic/terathalic acid, maleic anhydride and a glycol. The polymeric product is characterized by reactive unsaturation located along the molecular chain. This resin is compounded with a reactive styrene monomer and reacted together with initiators/promoters to produce crosslinked coplymer matrices.

2. Vinylester Resin

   a. A resin created by reaction products of epoxy resins with methacrylic acid and characterized by reactive unsaturation located in terminal position of the molecular chain. This resin is compounded with a reactive styrene monomer and reacted together with initiators/promoters to produce crosslinked coplymer matrices.

3. Epoxy Resin

   a. A resin created by the reaction of epichlorohydrin and Bisphenol-A, Bispehnol-F, (or a Novalac in some cases) to yield a diglycidyl ether (triglycidyl ether in the case of Novalacs) having terminal epoxy rings as the reactive sites.

D. Resin Enhancers

1. Resin enhancers are allowed and may be used by the Contractor as proposed by the liner manufacturer. The Contractor or resin blender shall submit data certifying that the recommended and proposed limits have not been exceeded.

2. The Contractor shall submit data on the resin enhancer used including size range (in microns), amount used in the formulated resin, bond enhancing coating material used, and certification from resin manufacturer or formulator that bond enhancer used is compatible with the resin system used.

3. Submit with bid documents certification from enhancer manufacturer that the material is suitable for use in aqueous environments. Enhancer material must be made in a "batch method" procedure and attested to by the manufacturer.

E. Bond Enhancers

1. The Contractor’s fiberglass reinforced felt shall utilize a suitable bond enhancing compound to increase the bond between resins and other materials.

2. The Contractor shall submit certification from bond enhancer manufacturer that the material is suitable for use in aqueous environments.

F. Other Additives

1. Additives required for viscosity control, fire retardant, physical or chemical resistance, or pot life extension may be used provided they do not interfere with visual inspection of the finished, installed product.

2.04 DESIGN PARAMETERS

A. STRUCTURAL REQUIREMENTS

1. The CIPP design shall assume no bonding to the original pipe wall.

2. External Buckling Design: Where the CIPP is designed as a stand alone pipe, a fully deteriorated condition, the Contractor shall furnish to the Owner, third party testing and verification of design analysis techniques for each manufacturer and/or CIPP product.

3. The bond between all CIPP layers shall be strong and uniform. All layers, after cure, must form one homogeneous structural pipe wall with no part of the tube left unsaturated by resin.

4. The following design parameters shall be used. Design parameters shall not be devalued in the event of an under-thickness liner.

Parameter CIPP System	
1. Pipe Condition	Fully deteriorated
2. Soil Type	Saturated/unsaturated
3. Design Thickness	The output product thickness needs to at a minimum meet the design thickness.
4. Groundwater Depth	Ground surface level
5. Ovality of Pipe	2% of circumference (min.)
6. Soil Load	120 lbs./cf
7. Traffic Loads	Per AASHTO-HS-20-44 Highway Loading
8. Modulus of Soil	Max 1,000 psi
9. Long Term Flexural Strength	50% of initial (ASTM D-790)
10. Long Term Flexural Modulus	

of Elasticity	50% of initial (ASTM D-790)
11. Maximum Deflection (vertical axis)	7.5% (for stand alone purposes)
12. Minimum Safety Factor	2.0

5. Liner Thickness

   a. Liner thicknesses for the work specified, will be calculated by the Contractor for each specific line segment shown in the bid documents and appendices. The Contractor shall verify depth of cover for all line segments shown as part of the CIPP design. Contractor's design shall be based on actual depth of cover for each pipe segment shown.

6. Preliner Requirements

   a. If after the review of the pre-installation video, it is determined that there is excessive infiltration or voids in the host pipe, it will be the Contractor's responsibility to determine if a preliner tube shall be used to control resin loss and liner thickness. The preliner tube shall be reinforced plastic sheet formed into a tube sized to fit the host pipe being lined and shall be continuous from manhole to manhole. For long segments, several sections of preliner tube may be spliced together per the preliner manufacturer's recommendations to form a tube of adequate length. Installation of the preliner tube shall be witnessed by the Owner or Engineer. Failure to install the required preliner tube or installation of preliner tube over only part of the segment shall result in the completed CIPP for that segment being rejected (regardless of physical tests and thickness test results). During thickness testing, the preliner tube shall be removed from the thickness test core sample along with any inner liner film used.

   b. Color of the preliner tube shall be selected by the Owner prior to ordering.

   c. As an alternate to using a preliner to halt infiltration, the Contractor may opt to grout the host pipe joints. A test and seal program as defined in Section 02568 is acceptable.

   d. Both the preliner and grouting, if needed, shall be included in the cost of the liner and it shall be the Contractor's responsibility to insure that infiltration does not effect the curing or strength of the final product.

7. The cured tube shall conform to the minimum structural standards, as listed below.

Cured Liner Minimum Structural Standards					
Measured Criteria	**ASTM**	**Vinylester Values**	**Epoxy Values**	**Polyester Values**	**Unit**
Tensile Strength	D-638	3,000	4,000	3,000	psi
Flexural Stress	D-790	4,000	5,000	4,500	psi
Flexural Modulus	D-790	250,000	250,000	250,000	psi
Maximum Pipe Deflection Allowed is 7.5%					
Strength values are Median Values for temperature Ranging from 40ºF (4ºC) - 70ºF (21ºC)					

B. TESTING REQUIREMENTS

1. Testing of the completed, installed liner consists of:

   a. Field testing

   b. Laboratory testing

2. The Contractor will pay for all initial and retests described herein.

3. The following samples shall be taken of the field setup, discussed below, similar lined sewer segments at the discretion of the Owner but not more frequent than once every 5 runs. No destructive test will be allowed to liner to be left in place.

   a. Two cured plates, 6" x 16" in size. (see 2.04.B.3 and 4 - Physical properties and thickness). For clarification, the Engineer will require that field samples be taken from the cook down tube, not the liner in the pipe (No destructive test will be allowed to liner to be left in place).

4. Field Test (Thickness)-The liner shall be run through 24" long section of similar line-size to act as a mold for the liner and cured. One such sample shall be taken from liner at the ending manhole of the section being lined. One core sample shall be taken from the middle of each molded section

and thickness determined per the method above. Cost for any excavating, sampling, and backfill shall be included in the bid.

5. Laboratory Testing (Resin, Physical Properties)-Samples obtained for these tests will be sent by the Contractor to an approved laboratory for the following tests.

   a. Resin: Using the cured resin sample, an infrared spectrography chemical fingerprint shall be run and compared to the submitted fingerprint (Section 2.03.B Resin Definitions and Physical Characteristics) to verify the resin used is the resin submitted for use on this project. Unapproved resins or resins not submitted with the bid documents are rejected and any liner installed with unapproved resin will be removed and replaced at Contractor's expense.

   b. Physical Properties: The cured 6" x 16" plate will be used to test modulus of elasticity and flexural strength and to verify the requirements have been met.

   6. Chemical Resistance: The CIPP shall meet the minimum chemical resistance for standard domestic sewer applications unless directed otherwise by the Owner. Chemical resistance tests should be completed in accordance with Test Method D 543. Exposure should be for a minimum of one month at 73.4º F (23º C). During this period, the CIPP test specimens should lose no more than 20% of their initial flexural strength and flexural modulus. A makeup of the chemical solutions is as defined below.

CIPP Chemical Resistance	
Chemical Solution	**Concentration %**
Tap water (pH 6-9)	100
Nitric Acid	5
Phosphoric Acid	10
Sulfuric Acid	10
Gasoline	100
Vegetable oil	100
Detergent	0. 1
Soap	0.1

   7. Long-Term Reduction in Physical Properties: Long-term creep data in accordance with ASTM D2990 shall be submitted by each manufacturer and/or CIPP product. Duration of creep testing shall be

a minimum of 10,000 hours. As an option, documentation for a minimum of 10,000 hours of pipe long term modulus evaluation by an outside test lab may be provided.

8. Hydraulic Capacity: Calculations must support that the CIPP shall have at least 100% of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the original pipe material (as provided by the Engineer). The Contractor shall provide third party test data for denoting the typical roughness coefficient of the CIPP.

9. CIPP Field Samples: To verify past performance, the manufacturer shall submit a minimum of five (5) test results from previous field installations of the same resin system and tube materials, as proposed for the actual installation. These test results must verify that the CIPP physical properties specified in section 2.04.A.7 have been achieved.

10. If glass fiber reinforcement is used, CIPP strain-corrosion testing in accordance with D3681 must be submitted.

PART 3 EXECUTION

3.01 GENERAL

A. Work performed under this specification shall be done in accordance with Municipal, State, and Federal standards. Traffic control and safety are the responsibility of the Contractor.

B. Extreme Weather Operations: Contractor shall pay particular attention during very cold and very hot temperatures or sub-freezing weather that cure is not affected. Exposed host pipe, taps, saturated ground, shallow bury or other conditions, which may adversely affect cure, must be eliminated or remedied by the Contractor.

C. Installation of the wetted-out carrier tube may be by inversion or insertion as preferred by the Contractor. All equipment, labor, materials, and processes required to complete the work must be ready on-site before installation begins.

D. The first segment shall be lined completed and accepted to become the “job standard” against which all subsequent work is judged.

3.02 TIME OF OPERATION

A. It is suggested that the Contractor schedule his/her operations to coincide with low flow levels inthe existing pipe (if any). It will be necessary for the contractor to determine the optimum time period for scheduling the work. It is the Contractor's responsibility to inspect the site of the work and determine site conditions.

3.03 PUBLIC NOTIFICATION

A. A public notification program shall be implemented, and shall, at a minimum, require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, and when the sewer will be off-line. The Contractor shall also provide the following:

1. Written notice to be delivered to each home or business describing the work, schedule, how it affects them, and a local telephone number of the Contractor that they can call to discuss the project or any problems, which could arise. This notice must be approved for use by the Owner.

2. All notices shall be prepared and distributed by the Contractor. Two notices will be required prior to construction, 24 hours and one week in advance of CIPP Work. In addition, a post construction notice is required within 24 hours of completion of CIPP Work. Notices shall be prepared and handed out to all residents and businesses affected by CIPP Work. All notices shall be approved by the Owner prior to distribution. Example notices will be prepared and given to the Contractor by the Owner. Contractor shall copy and distribute notices at no additional cost to the Owner.

3. Personal contact with any home or business that cannot be reconnected within the time stated in the written notice.

4. The Contractor must designate an ombudsman to handle complaints or questions from customers regarding the work. The ombudsman shall be equipped with a cellular phone and be on call 24 hours per day. The Owner will refer all customer calls concerning the work to the Ombudsman, who shall have the authority to rectify problems promptly and completely. Should the Ombudsman be away from the project, a designated replacement shall be appointed and equipped to handle Ombudsman duties and the Owner notified of the replacement. This person shall be all the necessary personal skills in dealing with the general public. The Owner reserves the right to alter notification procedures.

3.04 DEWATERING

A. It will be the Contractor's responsibility to dewater the sewer and maintain existing sewage flows at all times. A plan for dewatering must be submitted to the Engineer and the Owner for review and approval prior to commencement of any work.

B. The Contractor shall be responsible to maintain the existing flows at all times in an acceptable manner so as not to create a nuisance or in any way endanger the adjoining properties, utilities or environment.

C. By-passing to storm sewers or other watercourses shall not be allowed at any time.

D. The Owner does not assume any liability to the Contractor for any delay, loss or expense to which he may become subject, directly or indirectly, due to the normal or heavy flows in the existing sewer.

3.05 TV AND CLEANING

A. The pipe to be lined must be cleaned and televised per Section 02531, Cleaning and Television Inspection of Sewer Lines. There is a pre-installation and post rehabilitation requirement for television inspection.

B. The pipe to be lined shall be cleaned such that no debris or obstructions remain that are free of debris or obstructions that negatively affect the flow of wastewater through these pipes. Sanitary pipes not free of debris or obstructions may be removed from the work by the Engineer. The Engineer reserves the right to require additional cleaning of pipes to be lined to remove debris or obstructions at time of liner installation. Additional cleaning will be at no additional cost to the Owner.

3.06 LINE OBSTRUCTIONS

A. It shall be the responsibility of the Contractor to clear the line of all obstructions such as solids, dropped joints, protruding service connections or collapsed pipe that will prevent the insertion of the liner. As a general guide, a 10% reduction in the pipe area should be considered for repair or removal. It is the intent of this contract that all such reductions have been removed under previous contracts. 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 which are to be included in this pay item, then the Contractor shall inform the Owner that a point repair excavation is required to uncover and remove or repair the obstruction. No excavation work shall be performed without the prior approval of the Owner.

3.07 INSTALLATION

A. Prior to installation, the bypass pumping system, including back-up pumps, shall be tested and running. Additional manholes or access points shall be installed as needed by the Contractor. The cost of these access points is incidental to the project. Locations for these manholes/access points shall be submitted per Section 1.03 Submittals.

B. Resin Impregnation: The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. The resin shall be uniformly distributed throughout the tube.

C. The Contractor shall designate a location where the fiber tube will be impregnated ("wet out") with resin to thoroughly saturate the fiber tube prior to its dispatch for installation. The Contractor shall inform the Owner in advance to inspect the materials and the wet out procedure. A catalyst system or additive(s) compatible with the resin and tube may be used for viscosity control as provided by the resin manufacturer.

D. Unless the Contractor uses the "over-the-hole" wet out method, the resin impregnated tube shall be transported and stored in a refrigerated truck until it is installed in an existing line by using an application of water, air, or cable and winch properly placing the tube between the upstream and downstream manholes. Liner installation head pressures (minimum and maximum for hot and cold conditions) shall not be exceeded, regardless of method of installation (stand pipe, pressure unit, etc.) is used.

E. Using the "Inversion Procedure", the tube end shall initially be turned inside out and attached to a platform ring, standpipe, or as approved. The addition of water, air, or steam pressure will be adjusted to sufficient height/pressure to cause the impregnated tube to invert from manhole to manhole, and hold the tube tight against the existing pipe wall.

F. Using the "Insertion Procedure", the tube is winched into position according to manufacturer's recommendations. The addition of water, air, or steam pressure will be adjusted to sufficient height/pressure to cause the calibration hose to invert from manhole to manhole and hold the tube tight against the existing pipe wall.

G. No absorbent layers of tube shall be inserted into the existing pipe without being fully impregnated with resin.

H. Tube installation forces or pressures shall be limited so as not to stretch the tube longitudinally by more than 10% of the original length.

I. Any bladders or tubes used to inflate the tube material against the original pipe that were not fully bonded to the tube material prior to insertion into the original conduit shall be completely removed after CIPP installation.

J. The existing pipe must be dewatered for any CIPP installation that does not use an inversion method to expand the tube against the pipe wall. This involves the elimination of any incoming water (infiltration or inflow) and the removal of standing water.

K. Curing: After installation of the tube is completed, the Contractor shall supply a suitable heat source and water recirculation equipment. The equipment shall be capable of delivering hot water throughout the section by means of a perforated pre-strung hose to uniformly raise the water temperature above the temperature required to affect a cure of the resin. This temperature shall be determined by the resin catalyst system employed. Steam curing will be permitted provided the Contractor's lining system complies with all requirements of this Section.

L. The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing water supply. Another such gauge shall be placed between the impregnated tube and the pipe invert at the remote manhole to determine the temperature during cure. Water temperature in the line during the cure period shall be recommended by the resin manufacturer.

M. Initial cure shall be deemed to be completed when the exposed portions of CIPP appear to be hard and sound and the remote temperature sensor indicates that the temperature is of a magnitude to realize an exotherm. The cure period shall be of a duration recommended by the resin manufacturer, as modified by the designated process during which time the recirculation of the water and cycling of the heat exchanger to maintain the temperature continues.

N. Cool Down: The Contractor shall cool the hardened CIPP to a temperature below 100º F before relieving any bladders or tubes used to inflate the tube material against the original pipe. Cool down may be accomplished by the introduction of cool water to replace water being used to cure the tube material. Care shall be taken in the release of the water column so that a vacuum will not develop that could damage the newly installed pipe.

O. Finish: The finished CIPP shall be continuous over the entire length of the run and be as free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes and delamination. It shall also meet the leakage requirements or pressure test specified herein for the main line and lateral connections.

P. If due to broken or misaligned pipe at the manhole wall, the Contractor fails to make a tight seal, the Contractor shall apply a seal at that point. The seal shall be of a resin mixture compatible with the CIPP.

Q. Video inspections and tap reopening shall be performed using a swivel head camera capable of looking directly up a tap. Cutting and trimming equipment shall be able to satisfactorily perform the operations. Satisfactory operation of cameras and other equipment must be demonstrated and approved before lining operations begin. After the tube has been cured in place, the Contractor shall reconnect all the existing service connections. The Owner reserves the right to use means such as dye testing to confirm activity, as necessary at the cost of the Owner. Opening the lateral connections shall be done without excavation, and in the case of non-man entry pipes, from the interior of the pipeline by means of a television camera and a cutting device that reestablishes them to not less than 90% capacity. The cuts shall be trimmed to a neat, clean, circular opening concentric with the service line pipe, free of jagged edges, “sawteeth”, resin plugs or resin shelves. All cuts shall be brushed with a like resin or wire brush to form a smooth opening so as not to catch floatables in the sewage. No more than one excavation will be allowed for service reconnections in any ten reconnections. All excavations will be entirely at the Contractor’s expense.

R. The cured-in-place CIPP shall make a tight seal at the manhole opening with no annular gaps. Under all circumstances, the liner shall be sealed to the manhole and host pipe with quick-set epoxy mortar or high viscosity epoxy. Materials and procedures used shall be submitted for approval (1.03 Submittals). Where the liner continues through the manhole, the upper portion of the liner will be removed and the bottom half to remain resulting in a smooth, continuous flowline through the manhole. Inverts may be rebuilt using epoxy grout or the CIPP liner material should be sealed to the invert and bench with quick-set epoxy mortar or high viscosity epoxy. These procedures shall be completed before proceeding to the next manhole section.

S. The Contractor shall make sure through video inspection or whatever other means necessary that each active lateral connection is opened, free to discharge and is not plugged or backed up as a result of the lining operation.

3.08 INSPECTION

A. For each continuous length designated by the Owner in the contract documents or each production run of liner utilized (in the case where resins are applied as part of the manufacturing process), one liner sample shall be prepared from a section of the cured pipe at an intermediate manhole or at the termination point. (note: In areas with limited space and larger diameter pipes, other sampling techniques may be required.).

B. The liner samples shall be tested in accordance with the applicable ASTM procedures for the resin being used i.e. ASTM F1216.

C. Leakage testing of the liner shall be done in accordance with the latest provisions of ASTM F 1216, for Gravity Pipe Leakage Testing.

D. If the liner fails to meet the test criteria, it will be repaired as necessary by the Contractor, and retested, at no additional expense to the Owner. The sewer line will not be considered acceptable until it successfully passes the requirements of this test.

E. The Contractor shall be responsible for all costs, and delays incurred due to efforts to locate and repair any leaks in any sewer pipeline which fails the test, regardless of whether the failure is due to workmanship, material failure or the result of improperly installed equipment.

F. All testing will be conducted by the Contractor or his/her approved subcontractor in the presence of the Owner's representative. The Contractor or his/her subcontractor shall keep a written record that will show the results of the tests conducted. The records shall include sufficient data on length of line, weir levels, time, and related features noted during the testing of each segment of the line. A copy of records shall be given the Owner's Representative and Engineer.

G. Payment for work will not be considered until post videos are received, reviewed and accepted by the Owner. The Owner reserves the right to re-review tapes after payment for final acceptance. The post video shall include full mainline surveillance as well as the viewing of all laterals for adequate cutting of openings.

3.09 CLEAN-UP OPERATIONS

A. All materials removed from the sewer line and from the pipe lining process shall be satisfactorily disposed of offsite by the Contractor.

B. Prior to final acceptance, the Contractor shall demonstrate, in the presence of the Owner, the capability of the liner to perform as specified. Any deficiencies found in the liner shall be corrected at no additional cost to the Owner.

3.10 FIELD TESTING AND ACCEPTANCE

A. Field acceptance of the liner shall be based on the Engineer’s evaluation of the installation including inspection videos and a review of certified test data for the installed pipe samples.

B. Groundwater infiltration of the liner shall be zero.

C. All service connections shall be open, clear and watertight.

D. There shall be no evidence of splits, cracks, breaks, lifts, kinks, delaminations or crazing in the liner.

E. If any defective liner is discovered after it has been installed, it shall be removed and replaced with either a sound liner or a new pipe at no additional cost to the Owner.

END OF SECTION

SECTION 02767

MANHOLE REHABILITATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to rehabilitate existing sewer manholes, identifying correct sizes of and installing new frames and covers, repair or rebuild invert channels, sealing pipe connections and stopping active infiltration with chemical sealant in the manholes as shown on the Drawings.

B. The Contractor shall accurately field measure and size each individual manhole as required. The Contractor is reminded that each existing sewer manhole designated for rehabilitation may have a different configuration and varying field dimensions.

1.02 RELATED WORK

A. Maintenance of Flow in Existing Sewers is included in Section 01510.

B. Removal and Disposal of Existing Pipe, Manholes and Appurtenances are included in Section 02053.

C. Precast Concrete Manholes, Catch Basins and Structures are included in Section 02605.

E. Granular Fill Materials are included in Section 02230.

F. Work in State Highways and Right-of-Ways is included in Section 02550.

G. Temporary and Permanent Paved Surface Restoration is included in Section 02510.

H. Cured-in-Place Pipe for Sewer Mains is included in Section 02766.

1.03 SUBMITTALS

A. Submit to the Engineer, in accordance with Section 01300, shop drawings, product data, materials of construction and details of installation. Submittals shall include the following as a minimum:

1. Information regarding compounds for chemical sealing and installation equipment.

2. Sewer brick with notarized certificate indicating compliance with ASTM C32, Grade SS.

3. Manhole frame and cover with notarized certificate indicating compliance with ASTM A48, Class 30.

B. Submit to the Engineer, within 10 days of the Effective Date of the Agreement, the name of the supplier and a list of materials to be furnished.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM A48 – Standard Specification for Gray Iron Castings

2. ASTM C32 - Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)

3. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale).

4. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.

5. ASTM C150 - Standard Specification for Portland Cement.

6. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.

7. ASTM 1248 - Standard Specification for Polyethylene Plastic Molding and Extrusion Materials

8. ASTM D4101 – Standard Specification for Propylene Plastic Injection and Extrusion.

B. American Association of State Highway and Transportation Officials (AASHTO)

1. Standard Specifications for Highway Bridges

C. Occupational Safety and Health Administration (OSHA)

1. 29 CFR 1910.146 Permit-required confined spaces.

D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. All material shall be new and unused.

B. Material quantity, manufacturing process and finished sections are subject to inspection and approval by Engineer, Owner, or Owner representative. Inspection may be made at place of manufacture, at work site following delivery, or both.

C. Materials will be examined for compliance with ASTM standards, this Section and approved manufacturer's drawings. Additional inspection criteria include: appearance, dimension(s), blisters, cracks and soundness.

D. Materials shall be rejected for failure to meet any requirements specified herein. Rejection may occur at place of manufacture, at work site, or following installation. Mark for identification rejected materials and removed from work site immediately. Rejected materials shall be replaced at no cost to the Owner.

E. Repair minor damage to precast concrete sections by approved methods, if repair is authorized by the Engineer.

F. For a product to be considered commercially proven, a minimum of 1,000 vertical feet of manhole rehabilitation must have been completed over a period of at least three years with the material proposed by the Contractor. Submit a description of each project including material used, vertical feet of manhole rehabilitation performed and the owner's contact information.

PART 2 PRODUCTS

2.01 GENERAL

A. Reference to a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration.

B. Like items of materials/equipment shall be the end products of one manufacturer in order to provide standardization for appearance, operation, maintenance, spare parts and manufacturer's service.

2.02 DESCRIPTION OF WORK

A. Each manhole to be rehabilitated shall be thoroughly cleaned and then inspected for loose or missing bricks, loose mortar, holes, etc. These deficiencies shall be corrected before any work is conducted.

B. Manhole monolithic lining as specified in Section 02768 or manhole chimney lining as specified in Section 02769 shall not be implemented until all active leaking has been stopped.

2.03 SEALING MATERIALS TO STOP ACTIVE INFILTRATION

A. General

1. Mixing, handling and application of chemical sealing materials shall be in strict accordance with the manufacturer's instructions.

2. While being injected, the chemical sealant must be able to react/perform in the presence of water.

3. The cured sealing material must prevent the passage of water through the manhole defect. The sealing material must withstand submergence in water without degradation, remain flexible after curing, and must be able to withstand freeze/thaw and wet/dry cycles without adversely affecting the seal.

4. The cure sealant must be chemically stable and resistant to acids, alkalis and organics normally found in sewage and must not be biodegradable.

5. Residual sealing materials must be easily removable from the sewer line and manhole to prevent reduction or blockage of sewage flow.

6. Handling, formulation and storage of the sealing gel compound shall be in strict conformance with the manufacturer's instructions. The uncured gel shall be delivered to the site in unopened containers, with the date of manufacture clearly indicated, no uncured gel manufactured more than six months prior to the date of application shall be utilized. Any uncured gel compound determined to be more than six months old shall be immediately removed from the site. Once a container of uncured gel has been opened, it shall be used as soon as practically possible. If a container of gel is not used within 24 hours of being opened, the Contractor shall ensure that the gel has not been contaminated. Any gel found to be contaminated shall be removed from the site.

B. Acrylic base gel chemical sealing material shall have the following characteristics:

1. A minimum of 10% acrylic base material by weight in the total sealant mix. A higher concentration (%) of acrylic base material may be used to increase strength of set during injection.

2. The ability to tolerate some dilution and react in moving water during injection.

3. A viscosity of approximately 2 centipose which can be increased with additives.

4. A constant viscosity during the reaction period.

5. A controlled reaction time from 5 seconds to 6 hours.

6. The ability to increase mix viscosity, density and gel strength by the use of additives.

7. Use root inhibitor (50% active dichlobenil) when roots are present in manholes.

8. Acrylic base gel chemical sealing material shall be Avanti AV-118 or approved equal.

C. Urethane base gel chemical sealing material shall have the following characteristics:

1. One part urethane prepolymer thoroughly mixed with between 5 and 10 parts of water weight. The recommended mix ratio is one 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 lbs/gal) and a flash point of 20°F.

3. A liquid prepolymer having a viscosity of 600 to 1200 centipose at 70°F than can be pumped through 500 feet of ½-in hose with a 1,000 psi head at a flow rate of 1 ounce per second.

4. Water used to react the prepolymer shall have a pH between 5 and 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. Cure time shall be adjustable by the use of additives to the reaction water.

6. Use root inhibitor (50% active dichlobenil) when roots are present in manholes.

7. Urethane base gel chemical sealing material shall be Avanti AV-350 or approved equal.

D. Acrylamide Base Gel sealing material 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.

11. Acrylamide base gel shall be AV-100 as manufactured by Avanti International, or an approved equal.

12. If an acrylamide gel is used then an additive to increase the compressive and tensile strength as well as elongative properties shall be added to the grout mix. Additive shall be AV-257 as manufactured by Avanti International, or an approved equal. Mixing ratio shall be a minimum of 4 gallons in lieu of water per 30 gallon mix if acrylamide base gel is used. The grout shall be mixed as defined by the manufacturer.

E. The Contractor shall receive the Owner's approval prior to using any grouting material.

F. A representative of the grout manufacturer shall be on site for a minimum of five days at the start of the project to assure that all requirements are met.

G. A representative of the grout manufacturer shall be on site for a minimum of five days at the start of the project to assure that all requirements are met.

2.04 BRICK MASONRY

A. All bricks shall be sound, hard, uniformly burned, regular and uniform in shape and size. Underburned or salmon brick shall not be acceptable. Only whole brick shall be used.

1. Bricks for inverts and shelves shall conform to ASTM C32, Grade SS except that the mean of five tests for absorption shall not exceed 8 percent and no individual brick exceed 11 percent.

B. Mortar shall be composed of 1 part Portland cement, 2 parts sand and hydrated lime not to exceed 10 pounds to each bag of cement. Portland cement shall be ASTM C150, Type II; hydrated lime shall conform to ASTM C207.

C. Sand shall be washed, cleaned, screened and well graded, with all particles passing a No. 4 sieve and conform to ASTM C33.

2.05 MANHOLE FRAME AND COVER

A. Manhole frames and covers for existing manholes shall be of good quality, strong, tough, even grained cast iron, smooth, free from scale, lumps, blisters, sand holes and defects of any kind which render them unfit for the service for which they are intended. Manhole covers and frame seats shall be machined to a true surface. Castings shall be thoroughly cleaned and subject to hammer inspection. Cast iron shall conform to ASTM A48, Class 30.

B. See Section 02605 for the specified manhole frame and cover types.

C. Manhole frames and covers shall be suitable for highway traffic, including H20 wheel loads.

D. Contractor shall confirm manhole cover dimensions in the field prior to ordering product.

PART 3 EXECUTION

3.01 MANHOLE SEALING BY INJECTION METHOD

A. Sealing active leaks shall be by the Injection Method or equal. Generally, this shall be accomplished by forcing chemical sealing gel materials through a system of pumps and hoses. Jetting or driving pipes from the surface that could damage or cause undermining of the pipelines, shall not be allowed. Except where specifically shown as such on the Drawings, or called for in this Section, uncovering the manhole by excavation of pavement and soil to existing pipe grades, which would disrupt traffic, undermine adjacent utilities and structures, and cause further damage to the manholes being repaired, shall not be allowed.

B. As a minimum, each manhole to be sealed shall have gel insert sleeves placed, every two feet, vertically and horizontally, into the shelf, invert, pipe connections and manhole wall joints of each manhole with active leaks.

C. Into each insert sleeve, sealant materials shall be pumped through the hose system at controlled pressures, which exceed groundwater pressures. As a minimum, sufficient gel shall be delivered to effectively seal the manhole dry. Install additional insert sleeves and sealant as necessary, depending on the type and size of the leak encountered, type of soil and type voids being filled.

D. Allow one day for the sealant material to dry and then inspect each manhole. If leaks are observed in the sealed area of the manhole, place new gel insert sleeves and apply more sealant as necessary to stop the leak. The process shall be repeated as necessary to stop each leak.

3.02 DISPOSAL

A. The Contractor shall make provisions for the collection of cleaning solvents used in the cleaning of sealing equipment. Collected solvents shall be disposed of by an approved solvent recovery process. Disposal of cleaning solvents into the sewer system or into natural watercourses will be strictly prohibited.

3.03 SEWER FLOW CONTROLS

A. To effectively conduct the inspection and sealing operations, one or more of the following methods of flow control shall be used:

1. A sewer line plug shall be inserted into the line at a manhole upstream from the section to be inspected, tested and/or sealed. The plug shall be so designed that all or any portion of the sewage flows can be released. During the inspection portion of the operation, flows shall be shut off or substantially reduced in order to properly inspect the pipe at the invert. After the inspection is complete, flows shall be restored to normal or not more than ¼ of the pipe diameter during the joint testing and sealing operation.

2. Where pumping is required, in the opinion of the Engineer, to assure completion of the inspection and sealing work, the Contractor will be required to furnish pumping and bypassing equipment.

B. See Section 01510, Maintenance of Flow in Existing Sewers, for additional requirements.

3.04 REPAIR BRICK CHIMNEYS

A. The Contractor shall repair brick chimneys as required to complete manhole rehabilitation work, including removal of damaged bricks and mortar, and thoroughly cleaning all surfaces in and around the bricks that were removed. After the area to be repaired has been thoroughly cleaned, the Contractor will replace the missing bricks with new bricks and mortar as specified.

3.05 REMOVE AND REPLACE BRICK CHIMNEYS

A. The Contractor shall remove and replace brick or concrete chimneys as required to complete manhole rehabilitation work, including completely dismantling the existing chimney and all bricks or materials that comprise the chimney, and removal of the existing frame and cover. The chimney will then be rebuilt using new sewer and brick and mortar as required to set the frames and covers to the required height.

3.06 SETTING FRAMES AND COVERS

A. Set frames and covers in a full mortar bed. Utilize pre-formed grade rings to assure frame and cover are set to the finished grade. Set the manhole frame and cover to finished grade prior to placement of final paving.

3.07 REPAIR OR REBUILD INVERT CHANNELS

A. The Contractor shall repair or rebuild invert channels in existing sewer manholes where no defined invert channels or manhole shelves currently exist. After the area to be repaired has been thoroughly cleaned, construct channels and shelves of brick and concrete as shown on the Drawings. Brick lined channels shall correspond in shape with the lower half of the pipe. Set shelf elevation at crown of highest pipe and slope 1-in/ft to drain toward the flow through channel. Construct brick surfaces exposed to sewage flow with nominal 2-in by 8-in face exposed (i.e. bricks on edge).

END OF SECTION

SECTION 02901

MISCELLANEOUS WORK AND CLEANUP

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and perform the miscellaneous Work not specified in other sections but obviously necessary for the proper completion of the Work as shown on the Drawings.

B. When applicable, perform the Work in accordance with other related Sections. When no applicable specification exists, perform the Work in accordance with the best modern practice and/or as directed by the Engineer.

C. The Work of this Section includes, but is not limited to, the following:

1. Crossing and protecting existing utilities
2. Cleaning up
3. Incidental Work
4. Construction Photos and Video of Project
5. Protection and/or removal and replacement of signs, lampposts and mailboxes
6. Protection and bracing of utility poles
7. Restoring easement and right-of-ways
8. Restore fences, guide rails, retaining walls, and stairs
9. Traffic loops
10. Obtaining and complying with all construction permits.

1.02 SUBMITTALS

A. Submit to the Engineer, in accordance with Section 01300, a breakdown of the lump sum for miscellaneous Work and cleanup including the above items as a minimum. This breakdown shall be subject to approval by the Engineer and when so approved shall become the basis for determining progress payments and for negotiation of change orders, if required.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials required for this Section shall be the same quality of materials that are to be restored. Where possible, re-use existing materials that are removed.

B. All items shall be restored to a condition equal to or better than existed prior to the beginning of Work.

PART 3 EXECUTION

3.01 CROSSING AND PROTECTING EXISTING UTILITIES

A. The Contractor shall support, protect and maintain all pipes, conduits, sewers, drains, wires and poles in the line of excavation or adjacent thereto, and all fences, buildings or other structures which may be damaged by the work herein contemplated. In accordance with Public Act 77-350, the Contractor is required to notify any utility with facilities in the vicinity of the excavations at least seventy two (72) hours prior to commencing excavation. Notification shall be given by using the “Call Before You Dig” state-wide, toll-free telephone number 1-800-922-4455. Responsibility for proper notification of all utilities shall rest with the Contractor.

B. Whenever the work of this Contract crosses under or is located adjacent to gas mains, water mains, sewers, underdrains, electric ducts or poles, fiber ducts, telephone ducts or poles, or cable TV ducts and conduits, the Contractor shall notify the respective companies of such underground structures in the vicinity of the work and make all necessary arrangements with the Company for doing any work which may affect the property of the Company, or interfere with its operation. The Contractor shall take special care to avoid damage to these underground structures and shall be liable for any damage that may be caused by an act, omission or neglect on his/her part and shall pay all expenses of every kind of incidental to this work.

C. Perform all extra work required in crossing culverts, storm drains, gas mains, water mains, electric, telephone, gas and water services and other utilities. This work shall include: bracing, hand excavation, backfill and any other work required for crossing the utility or obstruction not included for payment in other items in the Bid Form. Notification of Utility Companies shall be as specified in Section 01046.

D. At pipe crossings and where designated by the Engineer, furnish and place screened gravel bedding so that the existing utility or pipe is firmly supported for its entire exposed length. The bedding shall extend to the mid-diameter of the pipe crossed.

E. Whenever it becomes necessary to change the location of any underground structures such as water or gas pipes, sewers, drains, conduits, etc., not otherwise provided for in these Specifications, the Contractor shall do the whole or portion of the work of making changes as the Engineer may require in writing, and this work shall be paid for under the respective item in the Bid Form or as additional work as provided for in the conditions of the Contract. The

Contractor will not receive any payment for equipment and labor tied up and unable to work because of this relocation work. If, in the opinion of the Engineer, the changes that are required can best be made by the parties owning the structures or by forces of the Owner, the Contractor shall give all reasonable facilities for doing this work in a proper manner and shall not claim or receive any payment for damages for delaying the continuance of his/her own work.

3.02 CLEANING UP

A. The Contractor shall remove all construction material, equipment and other debris remaining on the job as a result of construction operations and restore the site of the Work to a neat and orderly condition.

3.03 INCIDENTAL WORK

A. The Contractor shall complete any incidental work not otherwise specified, but obviously necessary to the proper completion of the contract as shown on the Drawings and as specified herein.

3.04 CONSTRUCTION PHOTOS AND VIDEOS OF PROJECT

A. Provide construction photos as specified in Section 01300, Submittals.

B. Provide video of project as specified in Section 01381, Audio Video Recording. - NOT USED

3.05 PROTECTION AND/OR REMOVAL AND REPLACEMENT OF SIGNS, LAMPPOSTS AND MAILBOXES

A. Existing signs, lampposts and mailboxes which may be damaged or removed during the course of installing the new pipelines shall be reinstalled in a vertical position at the same location from which they were removed. Replace damaged items with items of equal or better quality than the damaged items. Provide a concrete anchor as necessary, to ensure a rigid alignment at no additional cost. Exercise care in the reinstallation of all items to prevent damage to the newly installed pipelines.

3.06 PROTECTION AND BRACING OF UTILITY POLES

A. Make all arrangements with the proper utility companies for bracing and protection of all utility poles that may be damaged or endangered by the operations. Work under this item shall include the related removal and reinstallation of guy wires, or support poles whether shown on the Drawings or not.

3.07 RESTORING EASEMENTS AND RIGHT-OF-WAYS

A. Be responsible for all damage to private property due to the operations. Protect from injury all walls, fences, cultivated shrubbery, pavement, underground facilities, such as water pipe, wiring, lights, or other utilities which may be encountered along the route. If removal and replacement are required, it shall be done in a workmanlike manner so that replacement is equivalent or better to that which existed prior to construction.

B. Existing lawn and sod surfaces damaged by construction shall be replaced. Cut and replace the lawn and sod, or restore the areas with an equivalent depth and quality of loam, seed and fertilizer as necessary to produce a stand of grass equal to or better than existing prior to construction. These areas shall be maintained and reseeded, if necessary, until all Work under this Contract has been completed and accepted. Any additional Work required to restore property to the original condition shall be performed.

C. Existing bollards, fences, trees, shrubs, plants and bushes damaged or removed shall be replaced. It shall include the careful excavation of the root ball which shall be wrapped with burlap while out of the ground. Replant them after backfilling the trench, stake them in an upright position and shall periodically water replanted trees, bushes and shrubs. Be fully responsible for ensuring that any and all trees, bushes and shrubs removed and replanted "take" and return to a viable state. Any replanted item that fails to "take" or that is so damaged as to be unsuitable for replanting shall be replaced, at no additional cost to the Owner, with a tree, bush or shrub equal to the one removed.

D. The Engineer will inspect all Work for provisional acceptance upon the written request received at least 10 days before the anticipated date of inspection.

   1. After all necessary corrective Work has been completed, the Engineer will certify in writing the provisional acceptance of the planting.

E. All plants shall be guaranteed for not less than 1 full year from the time of provisional acceptance.

   1. At the end of this period, any plant that is missing, dead, or not in satisfactory growth, as determined by the Engineer, shall be replaced.

   2. All replacements shall be plants of the same kind and size. They shall be furnished and planted as specified herein. The cost of replacement shall be borne by the Contractor except where it can be definitely shown that loss resulted from vandalism or the Owner's failure to maintain planting as instructed.

3. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted by the landscape Contractor at least 10 days before the anticipated date. 4. After all necessary corrective Work has been completed and tree staking has been removed, the Engineer will certify in writing the final acceptance of the planting.

3.09 RESTORE FENCES, GUIDERAILS, RETAINING WALLS, AND STAIRS

A. Fences, guiderails, retaining walls, stairs, and all miscellaneous items not otherwise specified, encountered during the Work shall be carefully protected for resetting during surface restoration. Any item damaged shall be replaced at no additional cost. Each item shall be reset as close to its original location as practicable. All Work shall be approved by the Engineer. All merestones, iron pins or other property markers disturbed shall be reset by a licensed State of Connecticut Land Surveyor, at no additional cost to the Owner.

3.09 LOAMING AND SEEDING

A. The Contractor shall apply loam and seed to all areas disturbed during construction as specified in Section 02930. Loaming and seeding shall be paid under Items 6a, as directed by the Engineer.

3.10 TRAFFIC LOOPS

A. The Contractor shall replace all traffic loop detectors and conduits disturbed by construction at intersections. The loop detector leads shall be encased by metallic shield and insulated and all conduit openings shall be filled with duct seal. All work shall be approved by ConnDOT and the Town of Windsor. performed.

3.11 OBTAINING AND COMPLYING WITH ALL CONSTRUCTION PERMITS

A. The Contractor is responsible for obtaining and complying with all permits and their implementation, including but not limited to the NPDES Construction Dewatering Permit and the NPDES General Permit for Stormwater Discharges from Construction Activity.

END OF SECTION

SECTION 02905

UNPAVED SURFACE RESTORATION AND RESET MISCELLANEOUS ITEMS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this section includes furnishing, planting, installing and restoring all surfaces, including shrubs, trees, bushes, grasses, sod, milestones, signs, mailboxes, unpaved cross walks and driveways, walls, fences, guide rails and similar structures that are in any way disturbed by the work under the Contract. All items shall be restored to a condition equal to or better than existed prior to beginning the work. The work includes, all as shown, specified or directed, transporting materials, clearing, disposing of unused excavated materials, removing and disposing of all excavated sod, grass, shrubs, trees, etc., furnishing and planting trees, shrubs, grass, sod, etc., topsoil, gravel, mulch, fertilizer, watering, cleanup, etc., replacing signs, mailboxes, fences and similar structures and all incidental work, except as otherwise provided for.

B. The restoration of lawn areas and the planting of trees and shrubs shall be done by an experienced landscape contractor, whose work history for the last 5 years consists primarily of landscaping work and who has sufficient experience, satisfactory to the Project Engineer, in performing landscape restoration of this scope. Contractor shall provide the name of the landscaper prior to performing the actual restoration work along with a list of his references.

C. No direct payment will be made for any work done or materials used. Any costs incurred will be considered as having been included in the price bid per linear foot of pipeline or the appropriate bid item in the Proposal.

1.02 RELATED WORK:

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES

B. SECTION 02011, TEST PIT

C. SECTION 02200, EARTHWORK

D. SECTION 02900, LANDSCAPING - NOT USED

E. SECTION 02930, LOAMING SEEDING AND SODING

1.03 REFERENCES

The following standards based on the latest edition form a part of this specification as referenced:

A. ARTICLE M.13, CONN DOT FORM 816 - ROADSIDE DEVELOPMENT

1.04 SUBMITTALS. (Contractor shall provide)

A. Name and address of Contractor's Landscape contractor.

B. Name and address of Contractor's supplier for topsoil, seed and nursery stock.

C. Grass seed mixture showing proportions of the different grass species by weight and their percent purity and germination in accord with the testing provisions of the Association of Official Seed Analysts.

PART 2 - PRODUCT

2.01 MATERIALS

All unpaved surface restoration materials shall conform to the latest edition of Section M.13, CONN DOT FORM 816 and the following additional requirements:

A. All unpaved surface restoration material shall be equal to or better than the materials removed.

B. All miscellaneous items, including but not limited to, milestones, signs, mailboxes, walls, fences, guide rails, etc., to be replaced shall be equal to or better than the items replaced. (Refer to section 3.07)

C. The seed shall be delivered to the project accompanied by a properly executed affidavit for each type and shipment of seed. The affidavit shall be of the form shown in Section M.13 CONN DOT FORM 816, or latest revision, with the phrase "Connecticut Department of Transportation Project number(s)" replaced by "The Metropolitan District Contract Number" and shall be on the Official Stationery of the Supplier. For additional requirements refer to Section 02930.

PART 3 - EXECUTION

3.01 GENERAL

A. Where the Contractor's activities disturb, damage or kill lawn areas, plantings, gardens or trees, or where the Contractor's activities disturb or damage milestones, signs, mailboxes, unpaved cross walks and driveways, walls, fences, guide rails and similar structures the Contractor's Landscaper shall fully restore or replace the

disturbed, damaged or dead item to the satisfaction of the Engineer and affected homeowner. The landscaper shall perform all the work required to restore or replace each item affected in accordance with this Section and related Sections including but not limited to Section 02930 Loaming, Seeding and Sodding.

3.02 TOPSOIL

A. Where trenches are excavated through cultivated or grassed lands, ornamental plantings, etc., the turf and topsoil shall be removed and saved separately, and shall be replaced to its former position and depth. If the topsoil is lost, mixed with other materials or for other reasons should this material be insufficient to make replacements of topsoil to the former depths, similar soil shall be furnished to provide a fill at the top of the trench not inferior to the soil there prior to the excavation. However, in no case shall the thickness of the topsoil be less than four (4) inches.

3.03 SEEDING, SODDING

A. All disturbed areas shall be hydroseeded or sodded so that at the completion of the Contract, these areas will be left with a stand of perennial grass satisfactory to the Engineer at least equal to or better than the original grass.

3.04 TREES, SHRUBS, BUSHES, ETC

A. Certain trees, bushes, shrubs, etc., if so noted on the Contract Drawings shall be satisfactorily replaced (with the carefully removed and preserved existing stock or with new stock) and maintained for the duration of the Contract.

B. All trees, bushes or shrubs which are not to be removed shall be preserved and protected. Should any trees, bushes or shrubs, which are to be preserved and protected, become damaged by the conduct of the work, they shall be replaced at no additional cost to the District. The cost of clearing trees, bushes and shrubs and all special work or protection relative to trees, bushes and shrubs will be considered as having been included in the price bid per linear foot of pipe line, and/or other appropriate bid items in this Proposal.

C. Brush, small branches, slash, large trunks, stumps and all other surplus material and debris shall be removed from the site of the work, at no additional cost to the District.

3.05 GRAVEL DRIVEWAY

A. All gravel removed from driveways shall be replaced to the same grade and depth as the original. The gravel fill shall be of the same gradation as the original gravel removed. The Engineer shall inspect and give final approval of the gravel prior to placement. (Refer to Section 02510)

3.06 WATERING AND FERTILIZER

A. Appropriate watering and fertilizer shall be provided for planted grass, sod, trees, shrubs, bushes, etc., until the materials have become rooted to sustain normal growth. Watering, fertilizing and maintenance for all new or replaced vegetation will be the sole responsibility of the Contractor.

3.07 MISCELLANEOUS ITEMS

A. All miscellaneous items (milestones, signs, mailboxes, walls, fences, guiderails and similar structures) encountered during the work shall be carefully protected for resetting during surface restoration. Any item damaged shall be replaced. Each item shall be reset as close to its original location as practicable. All work shall be as approved by the Engineer. All milestones, iron pins or other property markers disturbed will be reset by a licensed State of Connecticut Land Surveyor, at no additional expense to the District.

END OF SECTION

SECTION 02930

LOAMING, SEEDING AND SODDING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required to place loam, including rough and fine grading, compaction, application and incorporation of soil amendments, application of seed or sod, and water and maintain seeded or sodded areas as shown on the Drawings and as specified herein, including areas disturbed by Contractor's activities.

1.02 RELATED WORK

A. Landscaping is included in Section 02900 - NOT USED

1.03 SUBMITTALS

A. In accordance with Section 01300, submit complete shop drawings, materials and equipment furnished under this Section including soil test results and recommendations, seed and sod mixtures, soil amendments, product label information, equipment for seed and sod establishment. Include source names and contact information for seed and sod.

B. Submit completed Affidavit of Fertilizer Form as specified in M.13.03 as specified in CTDOT Form 816.

C. Submit completed Affidavit of Seed Form as specified in M.13.04 as specified in CTDOT Form 816.

D. Samples of all materials shall be submitted for inspection and acceptance upon request.

E. Submit schedule for application of loam, soil amendments, seed and sod materials, including maintenance periods.

F. Submit full and complete written instructions for maintenance of seeded and sodded areas at the time of provisional acceptance.

1.04 REFERENCE STANDARDS

A. State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction (CTDOT Form 816).

PART 2 - PRODUCTS

2.01 LOAM

A. Loam shall conform to the requirements of M.13.01 as specified in CTDOT Form 816 for Topsoil with the following additions:

1. Organic matter shall not measure less than 2 nor more than 8 percent matter as determined by loss on ignition of oven dried samples at 105 degrees centigrade.

2. Loam pH shall be between 5.5 and 6.5.

3. Rocks and stones shall not exceed 1-in diameter.

B. Loam shall be fertile, natural soil, typical of the locality, free from large stones, roots, sticks, clay, peat, weeds and sod and obtained from naturally well drained areas. It shall not be excessively acid or alkaline nor contain toxic material harmful to plant growth.

C. Topsoil stockpiled and screened under other Sections may be used as loam, but the Contractor shall furnish additional loam at his/her own expense if required.

D. Loam Testing Program

1. Provide samples of loam to ensure loam fulfills specified requirements regarding textural analysis, organic matter content, pH and fertility as follows:

a. Provide one 20 lb sample of loam from each site that will be used as a loam borrow area in accordance with the provisions of other Sections herein. Submit samples at least 15 days prior to beginning stripping operations or 3 weeks prior to commencing loaming operations on the site; whichever is greater.

b. At least 3 weeks prior to anticipated start of loaming operations, a one pint sample of loam material for each site from which loam is to be stripped shall be delivered to A&L Eastern Agricultural Laboratories, 7621 Whitepine Road, Richmond, VA, telephone (804) 743-9401 for analysis by test methods S1A, S2, particle size analysis and lead content. Copies of test results shall be provided to the Construction Manager. All costs shall be the responsibility of the Contractor.

c. Based on test results, the loam shall be identified as "Acceptable", "Acceptable with certain fertilizer and limestone applications" or

"Unacceptable". If the loam is found acceptable, the fertilizer and limestone requirements will be as specified or as recommended. If the loam is found unacceptable, identify another source of loam and incur all expenses associated with testing additional samples. All loam incorporated into the site shall match the samples provided for testing.

2.02 SOIL AMENDMENTS

A. Lime shall conform to the requirements of M.13.02 as specified in CTDOT Form 816 for Agricultural Ground Dolomitic Limestone.

B. Fertilizer shall conform to the requirements of M.13.03 as specified in CTDOT Form 816 for fertilizer. At least 40% of the nitrogen in the fertilizer used shall be in a slowly available (organic) form.

C. Water shall be potable as provided by the Owner. See Section 01060 Regulatory Requirements for procedures and charges if using water obtained from Owner's facilities.

D. Where seed is applied hydraulically, a protective mulch layer shall be provided. Mulch shall be a specially processed wood cellulose fiber containing no growth or germination-inhibiting factors. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogeneous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture. Each package of the wood cellulose fiber shall be marked by the manufacturer to show the air dry weight content and shall conform to M.13.05-3 as specified in CTDOT Form 816 for wood fiber mulch. Paper fiber is not acceptable. Straw mulch is also acceptable to protect newly seeded areas and promote germination. Straw mulch shall be made 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% 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. Salt hay is not acceptable. With straw mulch, use a latex acrylic copolymer as a straw mulch tacking agent, such as Soil Sealant as manufactured by Soil Stabilization Co., Merced, CA or approved equal.

2.03 SEED

A. Naturalized Area Seed Mix (NASM), Lawn Area Seed Mix (LASM) and Temporary Grass Seed (TGS) shall be from the same or previous year's crop; each variety of seed shall have a percentage of germination not less than 80, a percentage of purity not less than 95 and shall have not more than 1 percent weed content. The mixtures shall consist of seed proportioned by weight as follows:

1. Naturalized Area Seed Mix (NASM)

   a. Shall conform to M.13.04 (a) as specified in CTDOT Form 816 for seed mixtures.

2. Lawn Area Seed Mix (LASM)

	Species	% Proportion by Wt	% min Purity	% min Germination
a.	Creeping Red Fescue	40	97	80
	Perennial Ryegrass	40	98	90
	Kentucky Bluegrass	20	85	80

3. Temporary Grass Seed (TGS)

   a. Shall conform to M.13.04 (b) as specified in CTDOT Form 816 for temporary grass seed.

B. Seed mixture materials shall conform to remaining portions of M.13.04 as specified in CTDOT Form 816.

C. Seed shall be furnished and delivered premixed in the proportions specified above. A manufacturer's certificate of compliance to the specified mixes shall be submitted by the manufacturer for each seed type. These certificates 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 certificates have been submitted.

D. Mulch shall be a specially processed cellulose fiber containing no growth or germination-inhibiting factors. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogeneous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture. Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content.

2.04 SOD

A. Sod shall conform to the requirements of M.13.08 as specified in CTDOT Form 816 for Sod with the following additions:

   1. Measurement for thickness shall not include top growth and thatch and shall be determined at the time of cutting in the field.

2. Individual pieces of sod shall be cut to the supplier's standard width and length. Maximum allowable deviation from standard lengths and widths shall be plus or minus 5% on length, and plus or minus ½-in on width.

B. Sod shall be grown by an established sod grower, as approved, and shall consist of the following grasses:

Botanical Name	Common Name	Percent
Poa pratensis	Kentucky Bluegrass	90 to 100
Festuca rubra	Jamestown Fescue	10 to 0

PART 3 - EXECUTION

3.01 LOAM

A. Do not destroy loam through excessive or unnecessary handling and compaction. Inappropriate handling leading to the compaction or deterioration of soil structure will result in the rejection of loam for use.

B. Loam shall be placed in accordance with 9.44.03 of CTDOT Form 816 for Construction Methods of Topsoil with the following additions:

1. Unless otherwise shown on the Drawings, loam shall be placed to a minimum compacted depth of 6-in on all lawn areas and 4-in in areas indicated to be naturalized.

2. The subgrade of all areas to be loamed and seeded shall be raked and all rubbish, sticks, roots, and stones greater than 2-in shall be removed. Subgrade surfaces shall be raked or otherwise loosened immediately prior to being covered with loam. Subgrade shall be inspected and approved by the Construction Manager before loam is placed.

3. Loam shall be placed over approved areas to a depth sufficiently greater than required so that after natural settlement and light rolling with a hand roller weighing not more than 100 lbs/ft or width, the complete work will conform to he lines, grades and elevations indicated. During rolling, depressions caused by settlement of rolling shall be filled with additional loam and the surface shall be regraded and rolled until a smooth and even grade is created.

4. No loam shall be spread in water or while frozen or muddy.

3.02 SOIL AMENDMENTS

A. Lime shall be applied in accordance with 9.46.03 of CTDOT Form 816 for Construction Methods of Liming (Seeding Methods) and 9.53.03 3 of CTDOT Form 816 for Construction Methods of Sodding (Sodding Methods) with the following additions:

   1. Apply lime at a rate of 25 lbs/ per 1,000 sq ft, or in accordance with recommendation results from Loam Testing Program above.

B. Fertilizer shall be applied in accordance with 9.50.03-3 of CTDOT Form 816 for Construction Methods of Turf Establishment (Seeding Methods) and 9.53.03 3 of CTDOT Form 816 for Construction Methods of Sodding (Sodding Methods) with the following additions:

   1. Apply fertilizer at the rate of 30 lbs/1,000 sq ft, or in accordance with recommendation results from Loam Testing Program above.

C. The application of fertilizer and lime may be performed hydraulically in one operation with hydroseeding and mulching. If lime is applied in this manner, clean all structures and paved areas of unwanted deposits.

D. Water for seeded areas shall be applied at a minimum rate of 1-in per week after application of seed, during, and after a 6 week germination period for the seed. Throughout this period, ensure the seed bed is maintained in a continuous moist condition, satisfactory for good germination and growth of grass. Water in areas to be sodded shall be applied 12-24 hours prior to laying sod, and immediately during and after laying of sod to a depth sufficient that the underside of the new sod pad, and soil immediately below the pad are thoroughly wet. Keep seeded and sodded areas in a moist condition until provisional acceptance.

E. Wood fiber mulch shall be hydraulically applied at the rate of 20 lbs/1,000 sq ft. Straw mulch shall be applied at a rate of 100 lbs/1,000 sq ft and tackfied with latex acrylic copolymer at a rate and diluted in a ratio per manufacturer's instructions.

3.03 SEEDING

A. Seeding shall be performed in accordance with 9.50.03-1 through 7 of CTDOT Form 816 for Construction Methods of turf establishment (Seeding Methods) with the following additions:

   1. Naturalized Area Seed Mix (NASM) shall be applied at a minimum rate of 6 lbs per 1000-sf.

2. Lawn Area Seed Mix (LASM) shall be applied at a minimum rate of 8 lbs per 1000-sf

3. Temporary Grass Seed (TGS) shall be applied at a minimum rate of 4 lbs per 1000-sf.

4. The subgrade of all areas to be loamed and seeded shall be raked and all rubbish, sticks, roots and stones larger than 2-in shall be removed. Subgrade surfaces shall be raked or otherwise loosened immediately prior to being covered with loam. Subgrade shall be inspected and approved by the Construction Manager before loam is placed.

5. Loam shall be placed over approved areas to a depth sufficiently greater than required so that after natural settlement and light rolling, the complete work will conform to the lines, grades and elevations indicated. No loam shall be spread in water or while frozen or muddy.

6. After loam has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. All large stiff clods, lumps, brush, roots, stumps, litter and other foreign material shall be removed from the loamed area and disposed of. The areas shall also be free of smaller stones. The whole surface shall then be rolled with a hand roller weighing not more than 100 lbs/ft of width. During the rolling, all depressions caused by settlement of rolling shall be filled with additional loam and the surface shall be regraded and rolled until a smooth and even finished grade is created.

7. Hydroseed only on a calm day.

8. If lime and fertilizer are to be spread mechanically rather than in one operation with the hydroseeding, then:

    a. After the loam is placed and before it is raked to true lines and rolled, limestone shall be spread evenly over loam surface and thoroughly incorporated with loam by heavy raking to at least 1/2 the depth of loam.

    b. Fertilizer shall be uniformly spread and immediately mixed with the upper 2-in of topsoil.

9. Seeding shall be done within 10 days following soil preparation. Seed shall be applied hydraulically at the rates and percentages indicated. The spraying equipment and mixture shall be so designed that when the mixture is sprayed over an area, the grass seed and mulch shall be equal in quantity to the specified rates. Prior to the start of work, furnish a certified statement for approval as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of

square feet of seeding that can be covered with the quantity of solution in the Hydroseeder.

10. In order to prevent unnecessary erosion of newly graded slopes and unnecessary siltation of drainage ways, carry out seeding and mulching as soon as satisfactory completion of a unit or portion of the project. A unit of the work will be defined as not more than 20,000 sq ft.

11. When protection of newly graded areas is necessary at a time that is outside of the normal seeding season, protect those areas by whatever means necessary (such as straw applied with a tar tack).

3.04 SEEDING IN WOODED AND UNGRADED AREAS

A. For preparation and seeding in wooded areas under this Contract and where no grading is required, all of the specified materials and procedures shall be utilized except that no disking shall be performed within the drip line of trees to be preserved. The seed bed shall be prepared by the addition of a thin layer of top soil roughly 1-in deep.

3.05 SODDING

A. Sodding shall be performed in accordance with 9.53.03 of CTDOT Form 816 for Construction Methods of Sodding with the following additions:

1. Perform sodding within 10 days following soil preparation.

3.06 MAINTENANCE AND PROVISIONAL ACCEPTANCE

A. Keep all seeded and sodded areas watered and in good condition, reseeding or resodding if and when necessary until a good, healthy, uniform growth is established over the entire area. Maintain these areas in an approved condition including a minimum of two mowings of the lawn areas until provisional acceptance.

B. On slopes, provide against washouts by an approved method. Any washout that occurs shall be regraded and reseeded or resodded at the Contractor's expense until a satisfactory stand of grass is established.

C. All work will be inspected for provisional acceptance at the end of the 8 week grass maintenance period, upon the written request, received at least 10 days before the anticipated date of inspection.

D. A satisfactory stand will be defined as a section of grass of 10,000 sq ft or larger that has:

1. No bare spots larger than 3 sq ft.

2. No more than 10 percent of total area with bare spots larger than 1 sq ft.

3. Not more than 15 percent of total area with bare spots larger than 6-in square.

E. Furnish full and complete written instructions for maintenance of the lawns at the time of provisional acceptance.

F. The inspection will determine whether maintenance shall continue in any area of manner.

G. After all necessary corrective work and clean-up has been completed and maintenance instructions have been received by the District, the Construction Manager will certify in writing the provisional acceptance of the seeded or sodded areas. Maintenance of grassed areas or parts of grassed areas shall cease on receipt of provisional acceptance.

3.07 GUARANTEE PERIOD AND FINAL ACCEPTANCE

A. All seeded and sodded areas shall be guaranteed for not less than 1 full year from the time of provisional acceptance.

B. At the end of the guarantee period, inspection will be made by the Construction Manager upon written request submitted at least 10 days before the anticipated date. Grass areas not demonstrating satisfactory stands as outlined above, as determined by the Construction Manager, shall be renovated, reseeded or resodded and maintained meeting all requirements as specified herein.

C. After all necessary corrective work has been completed, the Construction Manager shall certify in writing the final acceptance of the grassed areas.

END OF SECTION

SECTION 02971

CLEANUP

PART 1 - GENERAL

1.01 DESCRIPTION

A. The site of the work will be cleaned of all rubbish and surplus materials, and promptly put into good order comparable to conditions prior to the start of the contract as the work progresses.

B. If the Contractor shall fail to clean up the site promptly, the Engineer, after giving notice to the Contractor to do so and affording him reasonable time, may employ others to cleanup the site where conditions warrant such action, and may deduct the cost of such work from any sum or sums due or to become due to the Contractor.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 3
CONCRETE

THE METROPOLITAN DISTRICT

MAPLE AVENUE SANITARY SEWER REPLACEMENT & REHABILITATION

CONTRACT NUMBER 2013-04

TABLE OF CONTENTS

DIVISION 3 – CONCRETE

Section	Title
03100	CONCRETE FORMWORK
03200	CONCRETE REINFORCING
03302	MISCELLANEOUS CONCRETE
03740	MODIFICATIONS TO EXISTING CONCRETE

SECTION 03100

CONCRETE FORM WORK

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Forms shall be used for all concrete masonry including footings, except as otherwise permitted. Forms shall be so constructed and placed that the resulting concrete will be of the shape, lines, dimensions, and to the elevations indicated on the Contract Documents, and exposed concrete will be substantially free from board or grain marks, poorly matched joints, and other irregularities or defects.

1.02 RELATED WORK

A. SECTION 03302, MISCELLANEOUS CONCRETE

PART 2 - PRODUCTS

2.01 FORM MATERIALS

A. For surfaces to be given burlap-rubbed finish, the form surface in contact with the concrete shall be made of heavy gage metal, new plywood (used plywood which, in the opinion of the Engineer, is substantially equal to new plywood may be used), tempered wood fiber boards with smooth surface, or similar materials. Metal forms or form linings shall have square edges to that the concrete will not have fins or fluting. Joints between form panels shall be well fitted to as to be tight and result in substantially flush concrete surfaces on opposite sides of the joints. Forms shall not be pieced out by use of materials different from those in the adjacent form in such manner as will detract from the uniformity to the finished surface.

B. For surfaces other than those to be given burlap-rubbed finish, forms shall be made of wood, metal, or other acceptable material. Wooden forms shall be constructed of sound lumber or plywood of suitable dimensions, free from knotholes and loose knots. Plywood shall be reasonable good, as accepted. Metal forms shall be of an acceptable type for the work involved. Edges of forms in contact with concrete shall be flush within 1/16 in.

C. All forms shall be of suitable material, design, and construction as to be rigid, tight enough to prevent the passage of mortar, and plane surfaces shall be plane within 1/16 in. in 4 ft. Particular care shall be taken to ensure that forms are true to line where deviations in the concrete would be obvious or objectionable, as where building superstructures are to be built thereon, or where the tops of walls are exposed. All such deviations which may occur shall be corrected by, and at

the expense of the Contractor, as directed, even to the extent of tearing down and rebuilding the concrete.

D. Forms for walls, columns, or piers shall have removable panels at the bottom for cleaning, inspection, and scrubbing-in of bonding grout. Forms for thin sections (such as walls or columns) of considerable height shall be arranged with suitable openings so that the concrete can be placed in a manner that will prevent segregation and accumulations of hardened concrete on the forms or reinforcement above the fresh concrete, unless special spouts are used to place concrete, and so that construction joints can be properly keyed and treated.

E. Forms shall be sufficiently rigid to prevent displacement or sagging between supports, and so constructed that the concrete will not be damaged by their removal. The Contractor shall be entirely responsible for their adequacy.

2.02 FORM TIES

A. Form ties to be encased in concrete shall not be made of through-bolts or common wire, but shall be of a well-established type, so made and installed as to embody the following features:

1. After removal of the protruding part of the tie, there shall be no metal nearer than 1 in. to the face of the concrete.

2. The part of the tie which is to be removed shall be at least ½ in. in diameter, or if smaller, it shall be provided with a wood or metal cone 1 in. long placed against the inside of the forms. Cones shall be carefully removed from the concrete after the forms have been stripped.

3. Ties which pass through walls subject to hydrostatic pressure shall be provided with acceptable water stops, such as washers, securely fastened to the ties.

PART 3 - EXECUTION

3.01 FORM COATINGS

A. All forms shall be oiled with acceptable nonstaining oil or liquid form coating before reinforcement is placed.

B. During installation, the forms shall not be used as storage platforms nor as working platforms until the forms have permanently fastened in position.

C. The surface of installed forms shall not be overloaded.

D. Before form material is reused, all surfaces that are in contact with the concrete shall be thoroughly cleaned, all damaged pieces repaired, and all projecting nails withdrawn.

3.02 REMOVAL OF FORMS

A. Except as otherwise specifically authorized by the Engineer, forms shall not be removed until the concrete has aged for the following number of day-degrees*:

1. Beams and slabs - 50 day-degrees.

2. Walls and vertical surfaces - 100 day-degrees.

3. *Day-degree: total number of days times average daily air temperature at surface of concrete. For example, 5 days at a daily average temperature of 60° F. equals 300 day-degrees.

B. Shores under beams and slabs shall not be removed until the concrete has attained at least 60 percent of the specified cylinder strength and also sufficient strength to support safely its own weight and the construction live loads upon it.

END OF SECTION

SECTION 03200

CONCRETE REINFORCING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this section includes furnishing and placing concrete reinforcing steel bars, welded wire fabric and accessories as shown on the Contract Drawings, complete as shown, specified and directed.

1.02 RELATED WORK

A. SECTION 03100, CONCRETE FORMWORK.

B. SECTION 03302, MISCELLANEOUS CONCRETE.

1.03 QUALITY ASSURANCE

A. All materials shall be inspected and tested at the place of manufacture as required by the standard specifications to which the material is manufactured.

B. All materials shall be subject to inspection by the Engineer after delivery to the job site and may also be subject to inspection at the place of manufacture by a representative of the District.

C. In addition, the District reserves the right to have any or all materials inspected and/or tested by an independent service at either the manufacturer's plant or elsewhere. Such inspection and/or tests shall be at the District's expense.

1.04 REFERENCES

The following standards based on the latest edition form a part of this specification as referenced:

A. ANSI/ASTM A185- STANDARD SPECIFICATION FOR STEEL WELDED WIRE FABRIC FOR CONCRETE REINFORCEMENT.

B. ASTM A615-STANDARD SPECIFICATION FOR DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT.

1.05 SUBMITTALS

A. In accord with the General Conditions, six (6) copies of the shop drawings for the materials of this section shall be submitted for approval.

B. A certified statement that inspection and all of the specified tests have been made and met shall also be submitted.

PART 2 - PRODUCT

2.01 REINFORCING STEEL BARS

A. The reinforcement steel bars shall be newly rolled stock substantially free from mill scale, rust, dirt grease, or other foreign matter. Bars shall be of billet steel and, unless otherwise indicated, shall be Grade 60 bars.

B. Billet steel bars conform to ASTM A615.

C. All bars shall be rolled by an acceptable mill. Certified copies of tests of the bars furnished shall be submitted. The tests shall be as specified in the appropriate ASTM Specification referred to above and shall be made by an acceptable laboratory.

D. Reinforcing bars shall be accurately formed to the dimensions indicated on the drawings. Stirrups and tie bars shall be bent around a pin having a diameter not less than two times the minimum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than six times the minimum thickness, except for bars larger than 1 in., in which case the bends shall be made around a pin of eight bar diameters. All bars shall be bent cold.

E. Bars shall be shipped to the work with bars of the same size and shape fastened in bundles with securely wired-on metal identification tags giving size and mark.

F. Deformations on bars for concrete reinforcement shall conform to the requirements of the above-mentioned ASTM Specifications.

2.02 ACCESSORY MATERIALS

A. Welded steel wire fabric shall conform to the ASTM A185. The gage and spacing of wires shall be as indicated on the drawings.

PART 3 - EXECUTION

3.01 PLACING REINFORCING

A. Before being placed in position, reinforcing bars shall be thoroughly cleaned of loose mill and rust scale, dirt, and other coatings, including ice, that tend to interfere with development of proper bond. Where there is delay in depositing concrete after reinforcing is in place, bars shall be reinspected and cleaned when necessary.

B. Reinforcing shall be accurately positioned as indicated on the Contract Drawings, and secured against displacement by using annealed iron wire ties or suitable clips at intersections. Concrete blocks having a minimum bearings area of 2 inches by 2 inches and equal in quality to that specified for the slab shall be used for supporting reinforcing bars for slabs on grade. Where the underside of slabs will be exposed to view in the finished work,

stainless-steel supports shall be used. For other concrete, metal supports, spacers, or hangers may be used. Wood blocks, stones, brick chips, etc., shall not be used to support reinforcement.

C. Reinforcing which is to be exposed for a considerable length of time after having been placed shall be painted with heavy coat of cement grout, if required.

D. All concrete reinforcing shall be placed shown on the Contract Drawings and as herein specified. Concrete reinforcing in sizes No. 3 (3/8 in.) and larger shall be deformed steel bars of the shapes and sizes indicated on the drawings.

E. The Contractor shall advise the Engineer of the Contractor's intentions to place concrete and shall allow the Engineer adequate time to inspect all reinforcing steel in place. Any repairs, correction, cleaning, removal of debris, etc. necessary shall be accomplished prior to concrete being placed in that area. Wall forms and any deep form work shall be inspected before closing the form, as well as immediately prior to placing concrete.

F. The Engineer reserves the right to inspect the manufacturer's facilities while fabrication of reinforcing steel for this project is being performed.

END OF SECTION

SECTION 03302

MISCELLANEOUS CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this section includes furnishing and placing concrete of 3,000 psi, 28-day strength not included under any other sections for bulkheads, piers, pipe and duct and utility or structure supports, anchors, thrust blocks, etc. as shown on the Contract Drawings or directed by the Engineer. The work includes excavation, form work, cleaning areas to receive concrete, furnishing and placing concrete and reinforcing steel as detailed on the Contract Drawings, disposing of unused excavated materials, support of excavation, dewatering, and all incidental work, except as otherwise herein provided for.

1.02 RELATED WORK

A. SECTION 01110, ENVIRONMENTAL PROTECTION PROCEDURES

B. SECTION 02140, DEWATERING AND DRAINAGE

C. SECTION 02160, EXCAVATION SUPPORT SYSTEMS

D. SECTION 02200, EARTHWORK

1.03 REFERENCES

The following standards based on the latest edition form a part of this specification as referenced:

A. SECTION M.03, CONN DOT FORM 816 - PORTLAND CEMENT CONCRETE

B. ARTICLE M.06.01, CONN DOT FORM 816 - REINFORCING STEEL

C. ACI 305R HOT WEATHER CONCRETING

D. ACI 306R COLD WEATHER CONCRETING

1.04 SUBMITTALS

A. In accord with the General Conditions, and Section 01300 six (6) sets of the concrete mix design shall be submitted for approval.

PART 2 - PRODUCT

2.01 CONCRETE

A. Concrete shall conform to the requirements of Section M.03, CONN DOT FORM 816. The concrete 28-day compressive strength shall be 3,000 pounds per square inch.

2.02 REINFORCING STEEL

A. Reinforcing steel bars shall be new and conform to Article M.06.01, CONN DOT FORM 816, Grade 60.

2.03 FLOWABLE FILL

A. Flowable fill shall have a 28-day compressive strength of 100 psi.

B. The aggregate shall be sand.

C. The water/cement ratio shall be 2.05.

D. Use one Grace Parafill Egg per cubic yard.

PART 3 - EXECUTION

3.01 PREPARATION

A. Before placing concrete, all excavation for concrete, forms, access, etc., shall be complete, forms and the space to be occupied by the concrete shall be thoroughly cleaned, and reinforcing steel and embedded metal shall be free from dirt, oil, mill scale, loose rust, paint or other material which would tend to reduce the bond. All excavation shall be properly shared and dewatered.

B. Earth, concrete, masonry, or other water permeable material against which concrete is to be placed shall be thoroughly saturated with water immediately before concrete is placed.

C. No concrete shall be placed until the consolidation of the ground and the arrangement and details of forms and reinforcing have been inspected and approved by the Engineer.

D. Concrete thrust and anchor blocks, pipe supports, etc. shall conform to the details shown on the Contract Drawings or as directed by the Engineer and be placed against undisturbed earth. Wooden side forms shall be used to provide satisfactory lines and dimensions for thrust and anchor blocks. Felt roofing paper shall be placed to protect joints. No concrete will be placed so as to cover joints,

bolts or nuts, or to interfere with the removal of the joints. Tar paper or strips of 1-inch thick flexible plastic foam shall be placed and tied around the water pipe prior to pouring the concrete for supporting other existing underground pipes as shown. Construction joints shall be formed in concrete cradles if so shown or ordered.

3.02 CONCRETE PLACING DURING COLD WEATHER

A. Concrete shall not be placed on frozen ground and no frozen material or material containing ice shall be used. Materials for concrete shall be heated when temperature is below 40ºF, or is expected to be below 40ºF within 72 hours, and the concrete after placing shall be protected by covering, heat, or both.

B. All details of Contractor's handling and protecting of concrete during freezing weather shall be subject to the approval and direction of the Engineer. All procedures shall be in accordance with provisions of ACI 306.

3.03 CONCRETE PLACING DURING HOT WEATHER

A. Concrete just placed shall be protected from the direct rays of the sun and the forms and reinforcement just prior to placing shall be sprinkled with cold water. Every effort to minimize delays which will result in excessive mixing of the concrete after arrival on the job shall be taken.

B. During periods of excessively hot weather (90ºF or above), ingredients in the concrete shall be cooled insofar as possible and cold mixing water shall be used to maintain the temperature of the concrete at permissible levels all in accord with the provisions of ACI 305. Any concrete with a temperature above 90ºF, when ready for placement, will not be acceptable, and will be rejected.

3.04 FIELD QUALITY CONTROL

A. Concrete inspection and testing may be performed by the Engineer or by an inspection laboratory, designated by the Engineer, engaged and paid for by the District. Testing equipment will be supplied by the laboratory, and the preparation of samples and all testing will be performed by the laboratory personnel. Full assistance and cooperation, concrete for samples, and such auxiliary personnel and equipment as needed shall be provided.

B. At least 4 standard compression test cylinders may be made and tested. One (1) slump test from each day's placement of concrete may also be made. A minimum of four compression test cylinders may be made and tested for each 100 cubic yards of each type and design strength of concrete placed. Two cylinders will be tested at 7 days, and two at 28 days. If job experience indicates additional cylinder tests or other tests are required for proper control or determination of concrete quality, such tests will be made.

C. The Engineer shall have the right to reject concrete represented by low strength tests. Rejected concrete shall be promptly removed and replaced with concrete conforming to the specifications. The decision of the Engineer as to whether substandard concrete is to be accepted or rejected shall be final.

3.05 FLOWABLE FILL

A. Consolidate the flowable fill by hand-spreading, rodding or tamping.

B. Bring the flowable fill to the correct level within the excavations.

C. Cure concrete as necessary.

D. Placement of materials over the flowable fill shall not be done until the material has reached a compression strength of 100 psi.

E. Test cylinders shall be taken weekly or as directed by the engineer to verify that the maximum design strength has not been exceeded.

END OF SECTION

THE METROPOLITAN DISTRICT

SECTION 03740

MODIFICATIONS TO EXISTING CONCRETE

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and cut, repair or otherwise modify parts of existing concrete structures or appurtenances as shown on the Drawings and as specified herein.

B. Work under this Section shall also include bonding new concrete to existing concrete.

C. No existing structure or concrete shall be shifted, cut, removed, or otherwise altered until authorization is given by the Engineer.

D. When removing materials or portions of existing structures and when making openings in existing structures, all precautions shall be taken and all necessary barriers, shoring and bracing and other protective devices shall be erected to prevent damage to the structures beyond the limits necessary for the new work, protect personnel and to prevent damage to the structures or contents by falling or flying debris. Unless otherwise permitted, shown or specified, line drilling will be required in cutting existing concrete.

1.02 RELATED WORK

A. Cutting, Coring and Patching are included in Section 01045.

B. Demolition of existing structures is included in Section 02050.

C. Trenching, Backfilling and Compaction are included in Section 02200.

D. Granular Fill Materials are included in Section 02202.

E. Concrete and Reinforcing Steel are included in Section 03200 & 03300.

1.03 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

2. ASTM C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Sheer.

3. ASTM C883 - Standard Test Method for Effective Shrinkage of Epoxy-Resin Systems Used with Concrete.

4. ASTM D570 - Standard Test Method for Water Absorption of Plastics.

5. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.

6. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.

7. ASTM D732 - Standard Test Method for Shear Strength of Plastics by Punch Tool.

8. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Bonding Compound

1. General

a. The bonding compound shall be a two-component, solvent-free, moisture insensitive epoxy resin material suitable for use as a bonding adhesive to bond fresh, plastic concrete to clean, sound hardened concrete and for grouting bolts and the bonding of mating materials.

2. Material

a. The epoxy material shall conform to the following requirements:

1) Component A - Component A shall be a modified epoxy resin of the epichlorohydrin bisphenol A type containing suitable viscosity control agents. It shall not contain butyl glycidyl ether.

2) Component B - Component B shall be primarily a reaction product of a selected amine blend with an epoxy resin of the epichlorohydrin bisphenol A type containing suitable viscosity control agents, pigments and accelerators.

3) The ratio of Component B:A shall be 1:1 by volume.

4) The material shall not contain asbestos.

b. Properties of the mixed material*

1) Pot Life - 25 to 35 minutes

2) Tack-Free Time to Touch (20 mil thickness) - 3 to 5 hours

3) Initial Viscosity (Brookfield Viscometer Spindle No. 3; Speed 100) - 1900 to 3700 cps

4) Color - Gray

c. Properties of the cured material*

1) Compressive Properties (ASTM D695) at 28 days

a) Compressive Strength - 8500 psi minimum

b) Modulus of Elasticity - 375,000 psi minimum

2) Tensile Properties (ASTM D638) at 14 days

a) Tensile Strength - 4000 psi minimum

b) Elongation at Break - 1.5 to 2.25 percent

c) Modulus of Elasticity - 275,000 psi minimum

3) Flexural Properties (ASTM D790) at 14 days

a) Flexural Strength (Modulus of Rupture) - 6300 psi minimum

b) Tangent Modulus of Elasticity in Bending - 400,000 psi minimum

4) Shear Strength (ASTM D732) at 14 days

a) Shear Strength - 5000 psi minimum

5) Water Absorption (ASTM D570; Section 6.5) at 14 days

a) Water Absorption - 1 percent maximum

6) Bond Strength (ASTM C882) Hardened to Plastic

a) Bond Strength (14 days moist cure) - 1500 psi minimum

7) Effective Shrinkage (ASTM C883)

a) Effective Shrinkage - Passes Test

* All test data is based upon material and curing conditions of 73 plus or minus 2 degrees F, 50 plus or minus 5 percent Relative Humidity

3. Approval Requirements

a. Furnish notarized certification that the material proposed for use meets all of the above requirements.

b. Bonding agent shall be Sikastix 370, Sikadur Hi-Mod, by Sika Corporation, Lyndhurst, NJ or equal.

B. Repair Mortar

1. General

a. Repair mortar shall be a two-component, polymer-modified, cementitious, fast-setting, trowel grade, structural repair mortar suitable for use on horizontal, vertical and overhead surfaces, on grade above and below grade on concrete and mortar.

2. Material

a. The polymer modified cementitious system shall consist of a factory preproportioned two-component system whose components conform to the following requirements:

1) Component A shall be a liquid polymer emulsion of an acrylic copolymer base and additives. This acrylic copolymer shall have the following properties:

a) pH 4.5 to 6.5

b) Minimum film forming temperature approximately 68 degrees F

c) Tear Strength approximately 990 to 1420 psi

d) Elongation at break 500 to 900 percent

e) Particle Size Range Less than 0.1 micron

2) Component B shall be a blend of selected Portland cements, specially graded aggregates, organic accelerator and admixtures for controlling setting time, water reducers for workability and a corrosion inhibitor.

3) The component ratio A:B shall be 1:7.2 by weight. The system shall not contain chlorides, nitrates, added gypsum, added lime, or high alumina cements. The system shall be non-combustible, either before or after cure.

b. Typical Properties of Mixed Components

1) Application Time (Working Time) - 15 minutes after combining components

2) Finishing Time - 20 to 60 minutes after combining components

3) Color - Concrete Gray

c. Typical Properties of Cured Material

1) Abrasion Resistance - 6 times that of controlled concrete

2) Bond Strength (pull off method) - 100 percent concrete substrate failure

3) Modulus of Elasticity - 4,500,000 psi minimum

4) Surface Scaling (Deicing salt solution freeze/thaw) - No deterioration after 120 cycles

5) Compressive Strength (2 hours 50 percent RH) - 150 psi minimum

6) Compressive Strength (28 days 50 percent RH) - 5,550 psi minimum

7) Flexural Strength (28 days 50 percent RH) - 1,300 psi minimum

8) This system shall conform with ECA/USPHS Standards for surface contact with potable water.

9) This system shall not produce a vapor barrier.

10) This system shall be thoroughly compatible with concrete.

11) Stone may be added.

12) System may be finished with power trowel.

d. Approval Requirements

1) Furnish notarized certification that the material proposed for use meets all of the above requirements.

2) Repair mortar shall be SikaTop 122 by Sika Corporation, Lyndhurst, NJ or equal.

C. Crack Sealant

1. General

a. Crack sealant shall be a two-component, solvent-free, moisture insensitive epoxy resin material suitable for crack grouting, by injection or gravity feed and bolt grouting and as a binder for mortar, concrete or grout in thermally stable environments and as a concrete sealer.

2. Material

a. The epoxy material shall conform to the following requirements:

1) Component A - Component A shall be a modified epoxy resin of the epichlorohydrin bisphenol A type, containing suitable viscosity control agents. It shall not contain butyl glycidyl ether.

2) Component B - Component B shall be primarily a reaction product of a selected amine blend with an epoxy resin of the epichlorohydrin bisphenol A type containing suitable viscosity control agents and accelerators.

3) The ratio of Components B:A shall be 1:2 by volume.

4) The material shall not contain asbestos.

b. Properties of the mixed components*

1) Pot Life - 20 to 30 minutes

2) Tack free time to touch (3 to 5 mils) - 2 to 4 hours

3) Initial Viscosity (Brookfield Viscometer Spindle No. 2, Speed 100) - 300 to 450 cps

4) Color - Amber

c. Properties of the cured material*

1) Compressive Properties (ASTM D695) at 28 days

a) Compressive Strength - 10,500 psi minimum

b) Modulus of Elasticity - 300,000 psi minimum

2) Tensile Properties (ASTM D638) at 14 days

a) Tensile Strength - 5500 psi minimum

b) Elongation at Break - 2 to 5 percent

c) Modulus of Elasticity - 60,000 psi minimum

3) Flexural Properties (ASTM D790) at 14 days

a) Flexural Strength (Modulus of Rupture) - 12,500 psi minimum

b) Tangent Modulus of Elasticity in Bending - 325,000 psi minimum

4) Shear Strength (ASTM D732) at 14 days

a) Shear Strength - 4500 psi minimum

5) Water Absorption (ASTM D570; Section 6.5) at 7 days

a) Water Absorption - 1.5 percent maximum

6) Bond Strength (ASTM C882)

a) Bond Strength (2 days dry) - 2000 psi minimum

b) Bond Strength (2 days dry plus 12 days moist) - 2000 psi minimum

7) Effective Shrinkage (ASTM C883)

a) Effective Shrinkage - Passes Test

8) When tested following the procedure prescribed by the Environmental Control Administration of the U.S. Public Health Service, the cured material shall be in conformity with the Federal Regulation requiring water extractables of less than 0.5 mg/in2 of exposed surface for potable water containers.

* All test data is based upon material and curing conditions of 73 plus or minus 2 degrees F, 50 plus or minus 5 percent R.H.

3. Approval Requirements

a. Furnish notarized certification that the material proposed for use meets all of the above requirements.

b. Crack sealant shall be Sikastix 350, Sikadur Hi-Mod LV, by Sika Corporation, Lyndhurst, NJ or equal.

D. Epoxy Paste Adhesive

1. General

a. Epoxy paste adhesive shall be a two-component, solvent-free, moisture insensitive epoxy resin material suitable for bolt grouting, as an adhesive for mating surfaces where the glue line is 1/8-in or less and to bond fresh, plastic concrete to clean, sound, hardened concrete.

b. The material shall be classified as Type I, Grade 3, Class B and C and a Type II, Grade 3, Class B and C adhesive in conformity to ASTM C881.

2. Material

a. The epoxy material shall conform to the following requirements:

1) Component A - Component A shall be a modified epoxy resin of the epichlorohydrin bisphenol A type, containing suitable viscosity control agents and pigments. It shall not contain butyl glycidyl ether.

2) Component B - Component B shall be primarily a reaction product of a selected amine blend with an epoxy resin of the epichlorohydric bisphenol A type containing suitable viscosity control agents, pigments and accelerators.

3) The ratio of Component B:A shall be 1:2 by volume.

4) The material shall not contain asbestos.

b. Properties of the mixed material*

1) Pot Life - 25 to 45 minutes

2) Tack-Free-Time to Touch - 2 to 3 hours

3) Consistency (1/2-in thick) - Non-Sag

4) Color - Gray

c. Properties of the cured material*

1) Compressive Properties (ASTM D695) at 28 days

a) Compressive Strength, psi - 10,000 minimum

b) Modulus of Elasticity, psi - 700,000 minimum

2) Tensile Properties (ASTM D638) at 14 days

a) Tensile Strength, psi - 3000 minimum

b) Elongation at Break, percent - 0.3 minimum

c) Modulus of Elasticity, psi - 630,000 minimum

3) Flexural Properties (ASTM D790) at 14 days

a) Flexural Strength (Modulus of Rupture), psi - 3700 minimum

b) Tangent Modulus of Elasticity in Bending, psi - 850,000 minimum

4) Shear Strength (ASTM D732) at 14 days

a) Shear Strength, psi - 2800 minimum

5) Water Absorption (ASTM D570; Section 6.5) at 7 days

a) Water Absorption, percent - 1.0 maximum

6) When tested following the procedure prescribed by the Environmental Control Administration of the U.S. Public Health Service, the cured material shall be in conformity with the Federal Regulation requiring water extractables of less than 18 mg/sq in of exposed surface for potable water containers.

* All test data is based upon material and curing condition of 73 plus or minus 2 degrees F; 50 plus or minus 5 percent Relative Humidity

3. Approval Requirements

a. Furnish notarized certification that the material proposed for use meets all of the above requirements.

b. Epoxy paste adhesive shall be Sikastix 390, Sikadur 31 Hi-Mod Gel, by Sika Corporation, Lyndhurst, NJ or equal.

E. Special Joint Sealant

1. Sealant shall be foamed polyurethane strip saturated with polybutylene waterproofing material. Sealant shall be applied to joint in a precompressed state.

2. When compressed to 50 percent of its original volume, sealant shall produce a hydrostatic seal.

3. Sealant shall maintain its resiliency to temperatures as low as minus 40 degrees F. Sealant shall be waterproof (when compressed to 50 percent of its original volume) in temperatures from minus 40 degrees F to plus 200 degrees F.

4. Elongation shall be at least 325 percent with a tensile strength of not less than 53 psi. The polybutylene compound in the polyurethane strip shall not migrate.

F. Metal primer shall be an approved organic zinc rich primer containing 95 percent zinc dust by weight.

G. Non-shrink Grout

1. Non-shrink grout for setting new anchor bolts in existing concrete shall be ready-to-use formulation, which when mixed with specific amounts of water will provide a pourable cementitious mixture.

2. Non-shrink grout for setting new anchor bolts shall be Super POR-ROK by Minwax Construction Products Division of Sterling Drug Inc., or equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Concrete removal, repairs and fabrication shall be as shown on the Drawings and as specified herein.

B. Except as otherwise indicated, in all locations where new concrete is to be deposited against existing concrete, bonding compound shall be applied to the surfaces of the existing concrete prior to placement of new concrete.

C. In all cases where the joint between new concrete and existing concrete will be exposed in the finished work, except as otherwise shown or specified, the limit of concrete removal shall be defined by a 1-1/2-in deep saw cut on each exposed surface of the existing concrete.

D. When the finished surface is not specified to be coated, the color of new concrete in the exposed surfaces shall match the color of the existing adjoining concrete as closely as possible.

E. Where indicated or specified, existing concrete shall be removed to the depth indicated or required to expose sound concrete. The surface exposed shall be roughened by chipping, sandblasting, scarifying or other appropriate means before applying bonding compounds, or repair material as specified.

F. The Engineer may from time to time direct the Contractor to make repairs to existing concrete. These repairs shall be made as specified herein or by such other methods as may be appropriate.

G. Reinforcing in existing concrete which is exposed as a result of removal of deteriorated concrete shall be wire brushed to remove all loose material and products of corrosion before proceeding with the repair.

H. All commercial products specified in this Section shall be stored, mixed and applied in strict accordance with the manufacturer's recommendations.

I. In all cases where concrete is repaired in the vicinity of an expansion joint or isolation joint the repairs shall be made so as to preserve the isolation between components on either side of the joint.

J. Where exposed embedded metal is required to be painted, prepare substrate as approved and paint with two coats zinc rich primer before installation of adjacent new materials.

3.02 SURFACE REPAIR AND PATCHING

A. Remove fractured, loose, deteriorated and unsound concrete by saw cutting, bush hammering, chipping or other appropriate means. Restore area to original limits or as shown using repair mortar.

3.03 EXPANSION JOINT REPAIR

A. Where indicated, existing premolded joint filler shall be removed and replaced with premolded joint filler. Special joint sealant shall be installed as indicated in accordance with manufacturer's instructions.

3.04 CRACK REPAIR

A. Cracks on horizontal surfaces shall be repaired by gravity feeding crack sealant into cracks.

B. Cracks on vertical surfaces shall be repaired by pressure injecting crack sealant through polyethylene valves sealed to surface with epoxy paste adhesive.

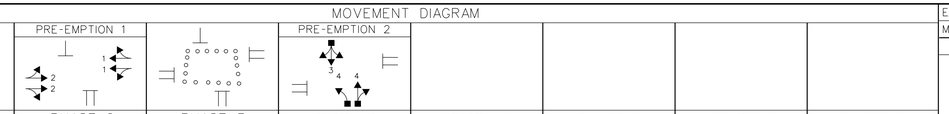
END OF SECTION

APPENDIX A

TRAFFIC CONTROL SIGNAL LAYOUT
PROJECT NO. 164-218
ROUTE 159 (BROAD ST.) AT MAPLE AVE. AND POST OFFICE RD.
TOWN OF WINDSOR

NONE

MOVEMENT DIAGRAM



NTOR		PHASE 1			PHASE 2			PHASE 3			PHASE 4			PHASE 5			PHASE 6			PHASE 7			PHASE 8		
	FLASH	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL
FACE # 1	Y				G	Y	R	R	R	R	R	R	R												
2	Y				G	Y	R	R	R	R	R	R	R												
3	R				R	R	R	R	R	R	G	Y	R												
4	R				R	R	R	R	R	R	G	Y	R												
P	OFF				← DW →			WØ	← DW →																
					← YIELD PT.																				
INTERVALS: MIN GRN					15						7														
WALK								7	AUDIBLE PEDESTRIAN SIGNAL																
PED CLR								14																	
VEH EXT											2.5														
MAX 1					30						25														
MAX 2					30						25														
YELLOW						4			0.0			3													
RED							2			0.0			1												
ADD INI																									
MAX INT																									
TBR																									
TTR																									
MIN GAP																									
MODE		OFF			MAX. RECALL			NON-LOCK			LOCK			OFF			OFF			OFF			OFF		
INI START					THIS PHASE																				

DETECTORS

IDENT	SIZE (WXL)	TURNS	MODE
D4	1.8 m x 1.8 m	3	PRESENCE
D4A	1.8 m x 1.8 m	3	PRESENCE
D4B	1.8 m x 1.8 m	3	PRESENCE

PROGRAM

FUNCTION	TIME	DAYS
FLASH	2200-0600	M-F
	2200-0700	SAT
	2200-0800	SUN
MAX. 1	ALL OTHER TIMES	
MAX. 2	FUTURE	
PATTERN 1	0640-0915	M-F
PATTERN 2	1130-1515	M-F
PATTERN 3	ALL OTHER TIMES	
PATTERN 5	1515-1830	M-F

COORDINATION TYPE- CLOSED LOOP

CYCLE	PHASE SPLITS SEC/% Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	OFFSET SEC	%
75"		60/80		15/20					59	79
65"		48/74		17/26					24	37
55"		35/64		20/36					20	36
75"		55/73		20/27					37	49

PERMIS PERIOD: Ø SEC

SYSTEM LOC: MASTER 164-227

164-211 164-234
164-214 164-244
164-218 164-255
164-219 164-271
164-220
164-221
164-222
164-223
164-229
164-231
164-233

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY

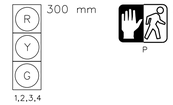
IF WALK PHASE CALLED DURING PATTERN 1, 2, 3 OR 5 THEN SIGNAL MAY DOUBLE CYCLE.

PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.

ENERGY BY- TOWN | ADDRESS # 103 | INTERSECTION # 164-211
MAINT. LEVEL 5 | SERVICE POLE- HELTCO 229

UNMETERED SERVICE

SIGNAL FACES



ALL INDICATIONS HAVE LED LAMPS.

PRE-EMPTION SETTINGS

	PRE-EMPT 1	PRE-EMPT 2
PRIORITY	NO	NO
DET. LOCK	YES	YES
DELAY	0	0
ALT. MIN. GRN	5	5
ALT. YELLOW	PARENT	PARENT
ALT. RED	PARENT	PARENT
ALT. PED. CLR.	14	14
HOLD GREEN	15	15
HOLD YELLOW	4	3
HOLD RED	2	1
HOLD PHASE	2	4
EXIT PHASE	4	2
EXIT CALL	NONE	NONE

OFFICE RECORD

REVISION # 11

STC # 164-9811-12 SM #
SIGNAL REVISED 1-21-02
REPLACED UTCS WITH CLOSED LOOP SYSTEM AND ADDED EMERGENCY PRE-EMPTION UNDER PROJECT 164-218.
INCLUDED IN CLOSED LOOP SYSTEM.
AS BUILT PLAN DRAWN 3-02

REVISION # 12

STC # N/A SM # 91443
TRAFFIC DESIGN: RST ELECT. DESIGN: N/A
SIGNAL REVISED: 8-13-08
REMOVED PROGRAMMED TIME FOR AUDIBLE PED. SIGNAL.

REVISION #13

STC #N/A SM #91197
TRAFFIC DES : AM ELECT DES : N/A
SIGNAL REVISED : 7-29-10
REVISED THE START OF FLASH TIME FROM 2100 TO 2200.

LEGEND

R RED
Y YELLOW
G GREEN
RED ARROW
YELLOW ARROW
GREEN ARROW
WØ WALK/ FL. D.W.
D.W. DON'T WALK
FL. FLASHING
PROPOSED WOOD SPAN POLE
EXISTING WOOD SPAN POLE
PROPOSED STEEL SPAN POLE
EXISTING STEEL MAST ARM
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTAL MOUNTING
PEDESTRIAN PUSH BUTTON & SIGN
TRAFFIC SIGNAL FACE
PEDESTRIAN SIGNAL FACE
LOOP DETECTOR
MAGNETIC DETECTOR
SD SYSTEM DETECTOR
OPTICAL DETECTOR
PROPOSED CONTROLLER
EXISTING CONTROLLER
PROPOSED HANDHOLE
EXISTING HANDHOLE
PROPOSED (R.M.C.) RIGID METAL CONDUIT
EXISTING (R.M.C.) RIGID METAL CONDUIT
CABLE CLOSURE DET. LEADS IN SAW CUT
AUXILIARY TERMINATION CABINET
AUXILIARY EQUIPMENT CABINET
AUDIBLE PEDESTRIAN SIGNAL

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL

TOWN OF WINDSOR
ROUTE 159 (BROAD ST.) AT
MAPLE AVE. AND POST OFFICE RD.

REV # 11	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER	PIO	8-98	PLM	3-99
DRAFTER	DMB	9-98	DMB	4-99
CHECKED BY	JPO	8-98	MRM	3-99
SUBMITTED BY	PJC	4-99	MJC	4-21-99
APPROVED BY	VINCENT AVINO		J. VIVARI	
DATE	4-20-99		4-21-99	

ORIGINAL SIGNED

CONSTRUCTION NOTES

ALL TRAFFIC SIGNAL EQUIPMENT IS NEW EXCEPT AS NOTED.

REMOVE ALL ABANDONED TRAFFIC SIGNAL EQUIPMENT INCLUDING FOUNDATIONS AND 32 mm CONDUIT RISER ON SNET POLE 15. HANDHOLE (H) TO REMAIN.

INSTALL NEW LOOP DETECTORS CENTERED IN LANE.

ALL INTERCONNECT CABLE, CONDUIT AND HANDHOLES ARE NEW UNLESS OTHERWISE SHOWN. ALL NEW INTERCONNECT CONDUIT AND HANDHOLES TO INT.#164-234 TO BE INSTALLED DIRECTLY BEHIND CONCRETE WALK. NEW HANDHOLES TO BE SPACED APPROXIMATELY 45.0 m APART.

REPLACE ENTIRE SECTION OF CONCRETE WALK DAMAGED DUE TO INSTALLATION OF CONDUIT.

(B) INSTALL TYPE IV CONTROLLER FOUNDATION ADJACENT TO FRONT EDGE OF WALK AT INTERSECTING POINT. INSTALL STATE FURNISHED CABINET AND CONTROLLER. CABINET DOOR TO OPEN FIELD SIDE.

(C) INSTALL MAST ARM FOUNDATON ADJACENT TO FRONT EDGE OF WALK AT INTERSECTING POINT. INSTALL 9.0 m MAST ARM ASSEMBLY. THIS MAST ARM IS TO HAVE A 7.7 m SHAFT AND A 25 mm SERVICE ENTRANCE FITTING LOCATED 300 mm FROM THE TOP OF THE SHAFT FOR THE OVERHEAD ELECTRIC SERVICE FROM HELTCO POLE 229.

(D) INSTALL MAST ARM FOUNDATON ADJACENT TO FRONT EDGE OF WALK AT INTERSECTING POINT. INSTALL 9.0 m MAST ARM ASSEMBLY.

(E) INSTALL MAST ARM FOUNDATON ADJACENT TO BACK EDGE OF WALK. INSTALL 12.0 m MAST ARM ASSEMBLY.

(F) INSTALL MAST ARM FOUNDATON ADJACENT TO BACK EDGE OF WALK. INSTALL 14.0 m MAST ARM ASSEMBLY.

(G) INSTALL TYPE A CABLE CLOSURE, 16/12 PAIR FIGURE 8 CABLE AND 16/6 PAIR INTERCONNECT CABLE.

(W) 760 mm X 760 mm CONCRETE HANDHOLE. ALL OTHERS ARE TYPE II.

INSTALL AUXILIARY EQUIPMENT CABINET ON LEFT SIDE OF CONTROLLER CABINET. INSTALL PRE-EMPTION EQUIPMENT IN AUXILIARY CABINET.

PRE-EMPTION IS TO OPERATE THROUGH THE INTERNAL PRE-EMPTION OF THE SIGNAL CONTROLLER.

STATE FORCES TO INSTALL A SWITCH IN THE SIGNAL CABINET TO EFFECTIVELY DISCONNECT THE PRE-EMPTION EQUIPMENT FROM THE TRAFFIC SIGNAL CONTROLLER.

INSTALL OPTICAL DETECTORS AND CABLE.

OPTICAL DETECTOR LOCATIONS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS SHALL BE DETERMINED BY THE MANUFACTURER OR HIS DESIGNATED REPRESENTATIVE. DETECTOR CABLES ARE TO BE INSTALLED CONTINUOUS BETWEEN EACH OPTICAL DETECTOR AND THE AUXILIARY EQUIPMENT CABINET.

CONTRACTOR SHALL CONTACT HIGHWAY OPERATIONS AT (860) 594-3447 24 HOURS PRIOR TO ANY WORK AT THE INTERSECTION THAT WILL EFFECT THE EXISTING COORDINATION EQUIPMENT OR TELEPHONE SERVICE.

CONTRACTOR TO INITIALLY INSTALL STOP BAR ON MAPLE AVENUE AS SHOWN AND ERADICATE ALL CONFLICTING MARKINGS.

REV #13 | INTERSECTION # 164-211

SIGN LEGEND

(A) EXISTING 31-0282Z

NOTES:

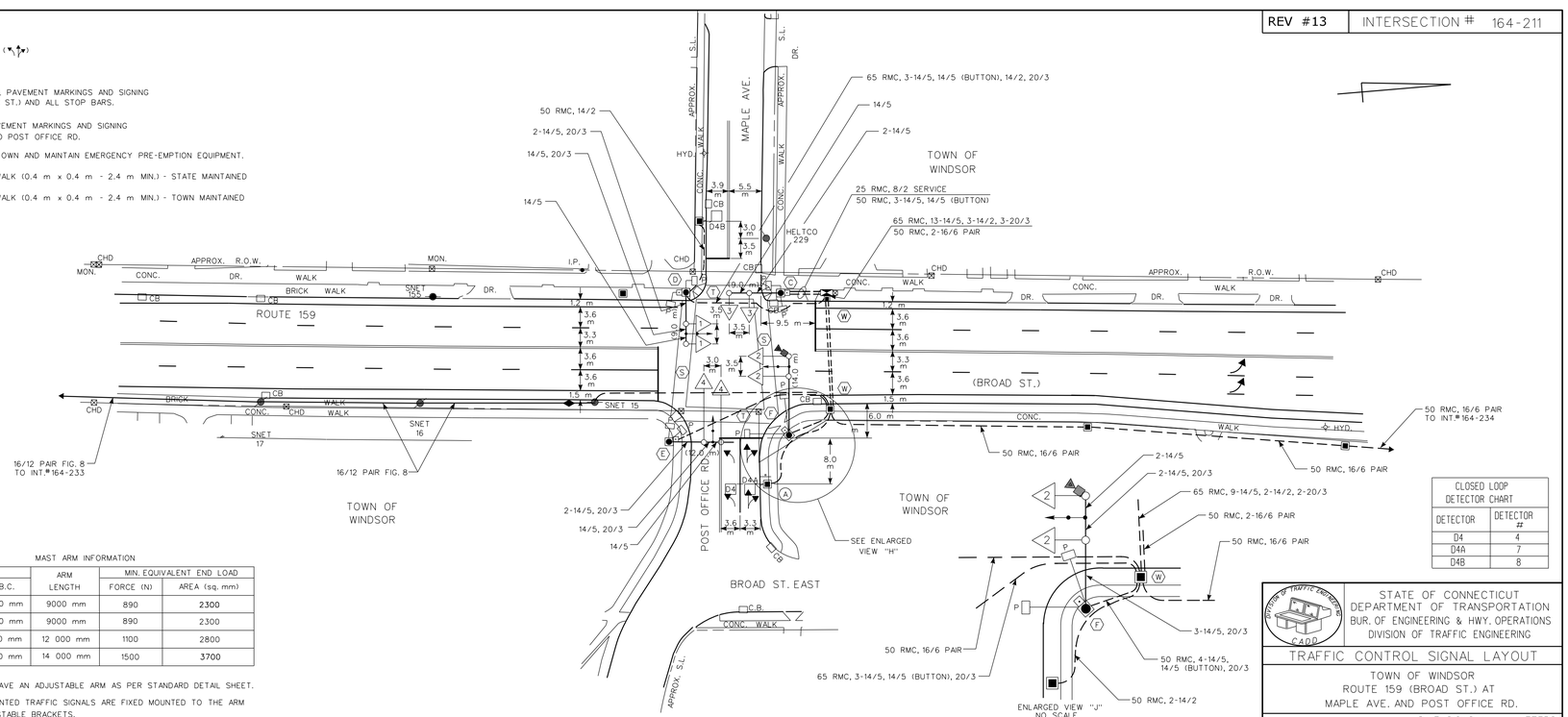
STATE TO MAINTAIN ALL PAVEMENT MARKINGS AND SIGNING ON ROUTE 159 (BROAD ST.) AND ALL STOP BARS.

TOWN TO MAINTAIN PAVEMENT MARKINGS AND SIGNING ON MAPLE AVENUE AND POST OFFICE RD.

TOWN OF WINDSOR TO OWN AND MAINTAIN EMERGENCY PRE-EMPTION EQUIPMENT.

(S) BAR TYPE CROSSWALK (0.4 m x 0.4 m - 2.4 m MIN.) - STATE MAINTAINED

(T) BAR TYPE CROSSWALK (0.4 m x 0.4 m - 2.4 m MIN.) - TOWN MAINTAINED



MAST ARM INFORMATION

	SHAFT LENGTH	SHAFT B.C.	ARM LENGTH	MIN. EQUIVALENT END LOAD FORCE (N)	MIN. EQUIVALENT END LOAD AREA (sq. mm)
(C)	7700 mm	460 mm	9000 mm	890	2300
(D)	6000 mm	460 mm	9000 mm	890	2300
(E)	6000 mm	510 mm	12 000 mm	1100	2800
(F)	6000 mm	510 mm	14 000 mm	1500	3700

MAST ARM SHALL HAVE AN ADJUSTABLE ARM AS PER STANDARD DETAIL SHEET.

ALL MAST ARM MOUNTED TRAFFIC SIGNALS ARE FIXED MOUNTED TO THE ARM BY USE OF ADJUSTABLE BRACKETS.

CLOSED LOOP DETECTOR CHART

DETECTOR	DETECTOR #
D4	4
D4A	7
D4B	8

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY. OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL LAYOUT

TOWN OF WINDSOR
ROUTE 159 (BROAD ST.) AT
MAPLE AVE. AND POST OFFICE RD.

SCALE 1:500 METRIC | ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

FILENAME : P:\projects\filemgt\158-169\TR_tcs_164_211_013.dgn PLOTTED : 9/24/2010

REV #13 | INTERSECTION # 164-211

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & HIGHWAY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL

F.H.W.A. REGION NO.	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO	YEAR	ROUTE NO.	SHEET NO.
1	CONN.	WINDSOR	CM-000S (993)	164-218	1999	159	18

APPENDIX B

ENVIRONMENTAL DATA REPORT
MAPLE AVENUE SEWER PROJECT
WINDSOR, CT
DATED NOVEMBER 26, 2012

GEI Consultants

Geotechnical
Environmental
Water Resources
Ecological

Environmental Data Report

Maple Avenue Sewer Project

Windsor, Connecticut

Submitted to:
The Metropolitan District
555 Main Street
P.O. Box 0800
Hartford, CT 06142-0800

Submitted by:
GEI Consultants, Inc.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
860-368-5300

November 26, 2012
Project 123290-*-1001

Barry Giroux
Task Manager

John McGrane
Program Manager

Table of Contents

1. Introduction 1
1.1 Team Personnel 1
1.2 Project and Site Description 1
1.3 Purpose and Scope of Services 2

2. Land Use Evaluation 3
2.1 Definition of Risk Levels 3
2.2 Visual Inspection 4
2.3 Present Land Use 4
2.4 Former Land Use 5
2.5 Environmental Protection Agency (EPA), Connecticut Department of Energy and Environmental Protection (CT DEEP), Local and Tribal Environmental Records Review 5

3. Field Investigations 7
3.1 Subsurface Explorations 7
3.2 Environmental Laboratory Testing 7
3.3 Elevation and Location Survey 7

4. Environmental Site Setting 8
4.1 Groundwater Conditions 8
4.2 Surface Water Conditions 8

5. Environmental Subsurface Conditions 9
5.1 Results of Field Screening 9
5.2 Results of Soil Analyses 9
5.3 Groundwater 10

6. Limitations 11

Table of Contents (Cont.)

Tables

1 Summary of Moderate- and Low-Risk Properties
2 Summary of Boring Location Elevations in October 2012
3 Summary of Detected Analytes

Figures

1 Site Location Map
2 Moderate Risk Properties
3 Boring Location Plan Maple Avenue

Appendices

A Portions of Environmental Data Resources, Inc. Report
B Boring Logs
C Laboratory Analytical Report and Results

BLG/ammH:\WPROC\Project\MDC\Connecticut\123290HartfordEnvTestCapitol&ChurchST\Task 1001\Env Report\Maple Ave Windsor Rpt.doc

1. Introduction

GEI Consultants, Inc. (GEI) was retained by The Metropolitan District (MDC) to conduct an environmental evaluation regarding the Maple Avenue sewer project, in Windsor, Connecticut (the "Project Area"). The work was authorized by Clarence Corbin, P.E., (MDC) in an email dated September 5, 2012, and was conducted in accordance with the terms and conditions of our agreement, RFQ #22, with the MDC.

The objective of the work was to assess the potential for soil contamination associated with current and former land uses in the vicinity of the Maple Avenue.

1.1 Team Personnel

GEI Team members involved in this project include GEI, Geologic Earth Explorations, Inc. (direct-push borings), and Phoenix Environmental Laboratories, Inc. (environmental laboratory testing).

The following GEI Team personnel performed the services for this report:

- John McGrane, P.E. — Program Manager
- Barry Giroux, P.E., LEP — Task Manager
- Christine Benetti, EIT — Field Engineer

1.2 Project and Site Description

The Project Area is located in downtown Windsor, as shown in Figure 1. The plan for the sewer project includes the replacement of an 8-inch diameter black plastic sanitary sewer and the relining of the 8- and 10-inch tile portions of the sanitary sewer. Based upon preliminary design plans provided by AI Engineers, Inc. to GEI in emails dated September 18, 2012, the proposed sewer project includes:

- Replacement of about 1,500 feet of an 8-inch diameter sanitary sewer along Maple Avenue, extending from Welch Avenue to Broad Street, including laterals.
- Relining of about 700 feet of 8-inch and 10-inch diameter sanitary sewer along Maple Avenue including laterals.

Proposed excavation depths range from 6 to 8 feet. Ground surface in the Project Area is gently sloping down towards the east (sloping down from Lennox Avenue to Broad Street).

1.3 Purpose and Scope of Services

The GEI investigation was intended to (i) identify current and former site uses within the Project Area and contaminants which may have impacted subsurface conditions, and (ii) chemically characterize soil which may be excavated from the Project Area during construction.

GEI completed the following scope of work for this investigation:

- Visual inspection of the Project Area to identify high- and moderate-risk properties
- Review of available historic Sanborn Fire Insurance (Sanborn) Rate maps and selected published federal, state, local, and tribal environmental databases and lists, for information on current and former use of the properties within the Project Area
- Installation of 8 direct-push borings throughout the Project Area
- Volatile organic compound (VOC) field-screening of all soils samples and laboratory analysis of selected soil samples

2. Land Use Evaluation

2.1 Definition of Risk Levels

For purposes of this evaluation, each property within the Project Area was assigned a relative risk rating of low, moderate, or high. The levels of risk were based on the potential that a release, discharge, spill, uncontrolled loss, seepage, and/or filtration of hazardous, petroleum-based, or other regulated substance has occurred. This determination was based on current conditions as observed during visual inspection, consideration of current and former land uses, and information contained in selected environmental databases and lists.

The designation of high-risk was assigned to those properties where current or former activities may have involved the use, storage, and/or disposal of chemicals, petroleum products, or other hazardous/regulated materials; where conditions or activities known to involve these materials are present; where historic land use indicated a high probability of environmental concern; or where the visual inspection or environmental database review identified environmental concerns. Parcels identified as a moderate-risk include those sites where relatively small quantities of regulated materials may have been used or stored at the site. Parcels with low-risk potential currently do not exhibit visible evidence of conditions that would suggest an environmental concern. In addition, no present or former land-use information or environmental records were found to suggest the use of significant quantities of regulated materials.

For purposes of this project, GEI defined high-, moderate-, and low-risk properties as those where the following activities currently are, or formerly have been, conducted:

<u>High-Risk Properties</u>:

- Manufacturing
- Motor vehicle dealers, sales, service and maintenance
- Freight transport and warehousing
- High intensity agriculture (i.e., where significant quantities of pesticides or herbicides may have been used)
- Heavy construction
- Facilities which generate, transport, store or dispose of hazardous, or other, wastes, and those which meet the definition of an “Establishment” under the Connecticut Transfer Act (CGS 22a-134 through 22a-134e), including auto body and painting shops, furniture strippers, and dry cleaners
- Petroleum product wholesalers and retailers (e.g., gasoline stations, bulk terminals)

- Industrial or commercial properties with underground or aboveground petroleum or chemical storage tanks

Moderate-Risk Properties:

- Large institutional faculties
- Professional office buildings
- Schools
- Residential properties with heating fuel underground storage tanks (USTs)

Low-Risk Properties:

- Single- and multi-family residential
- Retail sales
- Restaurants
- Undeveloped land
- Low intensity agriculture

2.2 Visual Inspection

GEI personnel conducted a visual inspection of the Project Area on October 2, 2012. The visual inspection was conducted from adjacent streets or other public properties. Direct access to private properties was typically not available. Due to the inherent limitations of the visual inspection, it only evaluated the visible exterior portions of the properties. All areas of potential environmental concern may not have been identified. For example, all USTs or areas of chemical storage may not have been apparent during the survey.

Environmental observations are summarized for each property other than residential properties in the attached Table 1. The locations of moderate-risk properties are shown in Figure 2. There were two moderate-risk properties located at the corner of Maple Avenue and Broad Street and at 77 Bloomfield Avenue. Petroleum was formerly stored in USTs at these two properties. All of the other properties were low-risk.

2.3 Present Land Use

The present land use of the properties within the Project Area was evaluated based on information obtained from the visual inspection. Land use within the Project Area consists primarily of residential with little commercial development. Maple Avenue, from Lennox Avenue to Preston Avenue, appears to consist of only residential properties. Several properties along the eastern end of Maple Avenue are commercial including a Town Hall, hostel, hotel, St. Gabriel Parochial School, attorneys, and financial establishments. There was no specific land use of high-risk encountered on Maple Avenue.

2.4 Former Land Use

The site history of the Maple Avenue Project Area was compiled from available Sanborn Fire Insurance Maps dated 1900 1921, 1927, 1947, and 1961. In general land use has not changed significantly from 1900 to the present day. In 1900, 1921, 1927, 1947, and 1961, developed properties along Maple Avenue were mixed-use residential and commercial. From these records the only sign of manufacturing on Maple Avenue was an awning manufacturing building located at 21 to 25 Maple Avenue shown on the Sanborn map dated 1961.

2.5 Environmental Protection Agency (EPA), Connecticut Department of Energy and Environmental Protection (CT DEEP), Local and Tribal Environmental Records Review

GEI searched federal EPA, CT DEEP, local and tribal, environmental lists and databases done by Environmental Data Resources, Inc. (EDR). GEI reviewed the information provided by EDR to evaluate current and former activities at properties within the Project Area. The portion of the EDR report pertinent to the Project Area is included in Appendix B of this report. It is not possible for either GEI or EDR to verify the accuracy or completeness of information contained in these lists and databases. However, the use of, and reliance on, this information is a generally accepted practice in the conduct of environmental due diligence.

The following federal, state, local, and tribal records were searched:

- Federal National Priority List (NPL) Sites
- Federal Delisted NPL Sites
- Federal CERCLIS List
- Federal CERCLIS No Further Remedial Action Planned (NFRAP) Sites
- Federal Resource Conservation and Recovery Act (RCRA) CORRACTS Facilities
- Federal RCRA Non-CORRACTS Treatment, Storage, Disposal (TSD) Facilities List
- Federal RCRA Generators List
- Federal Institutional Control/Engineering Control Registries
- Federal Emergency Response Notification System (ERNS) List
- State/Tribal-Equivalent NPL Sites (SHWS)
- State/Tribal-Equivalent CERCLIS Sites (SDADB)
- State/Tribal-Equivalent Landfill and Solid Waste Disposal Sites (SWF/LF and ODI)
- State/Tribal-Equivalent Leaking Storage Tank (LUST) Sites
- State/Tribal Registered UST List
- State/Tribal Institutional Control/Engineering Control Registry (AUL)
- State/Tribal Voluntary Cleanup Sites (VCP)
- State/Tribal Brownfields Sites
- State Oil and Chemical Spill Database

- Federal Proposed NPL
- Federal NPL Recovery
- Federal Hazardous Materials Information Reporting System (HMIRS)
- Federal Department of Defense (DOD) Sites
- Federal Formerly Used Defense Sites (FUDS)
- U. S. Brownfields
- Federal Superfund (CERCLA) Consent Decrees (CONSENT)
- Federal Records of Decisions (ROD)
- Federal Uranium Mill Tailings Sites (UMTRA)
- Federal ODI
- Federal Toxic Chemical Release Inventory System (TRIS)
- Federal Toxic Substance Control Act (TSCA)
- Federal FIFRA/TSCA Tracking System (FTTS) - Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA)/Toxic Substances Control Act (TSCA)
- Federal Section 7 of FIFRA Tracking System (SSTS)
- Federal Integrated Compliance Information System (ICIS)
- Federal PCB Activity Database System (PADS)
- Federal Material Licensing Tracking System (MLTS)
- Federal Mines Master Index File (MINES)
- Federal Facility Index System/Facility Registry System (FINDS)
- Federal RCRA Administrative Action Tracking System (RAATS)
- Manufactured Gas Plants (MGPs)
- Historical Auto Stations
- Historical Cleaner

Information contained in the above lists and databases for moderate-risk properties is summarized by property in Table 1. Two moderate-risk properties were identified on the State and Tribal Registered Storage Tank List. There was also a record of a manifest documenting the off-site shipment of hazardous waste from one of the properties.

3. Field Investigations

3.1 Subsurface Explorations

Subsurface explorations conducted in the Project Area consisted of 8 direct-push borings (B-1 to B-8). The borings were spaced approximately 200 feet apart.

The borings were installed on October 2nd, 2012 by Geologic Earth Explorations, LLC of Norwalk, Massachusetts. All borings penetrated to 8 feet below ground surface (bgs). The borings were backfilled with probe cuttings and the borings were completed with a cold-asphalt layer to patch the roadway surface.

Explorations were monitored by a GEI field representative. Boring locations on Maple Avenue are shown in Figure 3. Boring logs were prepared by the GEI field engineer and are provided in Appendix B.

3.2 Environmental Laboratory Testing

Soil samples were collected continuously from the borings for physical logging of soil types, test-screening for VOCs using a photoionization detector (PID), and for laboratory analyses for the following substances:

- VOCs by EPA Method 8260
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270
- Total metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver and zinc)
- Toxicity characteristic leaching procedure lead (TCLP Lead)
- Total petroleum hydrocarbons (TPH) by Connecticut Extractable TPH Method
- Polychlorinated biphenyls (PCBs) by EPA Method 8082
- Waste characterization parameters (corrosivity, reactivity, ignitability, and conductivity)

Analytical criteria were selected based on substances likely to have been used at properties within the Project Area and based on likely soil disposal/recycling facility acceptance requirements.

3.3 Elevation and Location Survey

The borings were located in the field by GEI by measuring from existing site features during the subsurface investigation. Coordinates and elevations have been estimated using: Connecticut State Plane NAD, and 2000 LIDAR. The data are referenced to North American Vertical Datum (NAVD88). The reported elevations and coordinates are shown in Table 2.

4. Environmental Site Setting

4.1 Groundwater Conditions

Groundwater within the project area on Maple Avenue is classified by the CT DEEP as a GA groundwater area. The GA classification indicates (1) existing private and potential public or private supplies of water suitable for drinking without treatment and (2) baseflow for hydraulically connected surface water bodies areas where public water-supply service is available.

4.2 Surface Water Conditions

There are several small water bodies with the classification of A within less than 0.1 miles of the Site. Class A designated uses are habitat for fish and aquatic life and wildlife; recreation; and water supply for industry and agricultural. The small water bodies described all run to the Farmington River (located approximately 1,700 feet east of the Project Area). This portion of the Farmington River is classified by the CT DEEP as B. Class B designated uses are habitat for fish and aquatic life and wildlife; recreation; navigation; and industrial and agricultural water supply.

5. Environmental Subsurface Conditions

Test borings were installed by direct-push methods at eight locations throughout the project area, as shown in Figure 3. Drilling field work included measurement of sample depths, examination of soil samples recovered, field screening for VOC concentrations, preparation of boring logs, and selection and preparation of soil samples for laboratory analyses.

5.1 Results of Field Screening

Soil sample field screening results are shown in the boring logs included in Appendix B. Insignificant levels less, i.e. than 1 part per million (ppm), of VOCs were detected in the majority of samples. VOCs were detected at levels greater than 1 ppm in borings B-2 and B-5 as shown in the boring logs in Appendix B.

Field screening results can be affected by soil moisture, atmospheric conditions, and other factors. The results of field screening did not indicate widespread VOC occurrence, consistent with the observed absence of staining, sheens and/or odors in the soil samples.

5.2 Results of Soil Analyses

At least one soil sample from each boring was submitted for laboratory analyses. Sample selection was based on field screening results, detection of odors, and appearance of staining.

The results of soil laboratory testing are summarized in Table 3; laboratory analytical reports along with a table of all the results are included in Appendix C. The laboratory testing was completed in accordance with the CT DEEP Laboratory Quality Assurance and Quality Control (QA/QC) Guidance, Reasonable Confidence Protocols Guidance.

One VOC, naphthalene, was detected in sample B-2 (4-6) feet at a concentration below Remedial Standard Regulation (RSR) criteria. This sample had to be diluted due to elevated VOC concentrations, which raised the laboratory reporting limits above RSR criteria for a few VOC compounds.

SVOCs were detected in samples B-1 (1-3) feet, B-2 (4-6) feet, and B-6 (2-4) feet. The SVOCs detected consisted of various polycyclic aromatic hydrocarbons (PAHs). Results from sample B-1 (1-3) feet were above RSR criteria. The concentration of three PAH

compounds exceeded the residential direct exposure criteria and/or the GB pollutant mobility criteria. SVOC concentrations in the samples from B-2 and B-6 were below RSR criteria. TPH were detected in B-2 (4-6) feet, at 33 ppm, which is below RSR criteria of 500 ppm.

PCBs were not detected in any of the samples analyzed.

Total metals (including arsenic, barium, chromium, copper, lead, nickel, and zinc) were detected in the soil samples. The concentrations detected are within the range of naturally occurring concentrations and below CT DEEP RSR criteria.

The concentrations of the waste characterization parameters and TCLP lead did not exceed levels that would characterize the soil as a hazardous waste in any samples.

Overall, reasonable confidence protocol criteria were met and the data is usable to identify any impacted soil. In a few cases laboratory performance criteria were not met as explained herein. Listed below are the compounds for which criteria were not met in some samples and the bias:

- No significant bias: SVOCs - 2-nitroaniline, 3-nitroanaline and 4-nitrophenol; VOCs -1,2,4-trichlorobenze and hexachlorobutadiene
- Low bias: SVOCs - 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, benzidine and hexachlorocyclopentadiene; VOCs - acetone

All performance criteria were met for all other compounds analyzed. None of the above compounds are constituents of concern or were detected in any samples. The non-detected reporting limit for these compounds should be considered to be estimated values.

5.3 Groundwater

Groundwater was not sampled or analyzed during this investigation program. Groundwater beneath the project area was not encountered during this subsurface investigation.

6. Limitations

This report was prepared for the use of the MDC.

The purposes of this investigation are to identify current and former site uses, and evaluate soil conditions and management options within the Project Area. The opinions that are provided are based on the information described in this report. Future investigation or information that was not available to GEI may result in modification of the findings of this report.

In preparing this report, GEI relied on file information provided by state and local officials and EDR, chemical analyses performed by others, and information and representations made to GEI at the time of the report. To the extent that such information is incomplete or inaccurate, GEI is not responsible. Our professional services for this project have been performed in accordance with generally accepted engineering practices; no other warranty, expressed or implied, is made.

Tables

Table 1
Summary of Moderate- and Low-Risk Properties
Maple Avenue Sewer Project
The Metropolitan District
Windsor, Connecticut

Address (Current Facility Name from Windsor, CT assessor website)	Description of Occupants and Summary of Findings			Possible Contaminants/ Hazards	Applicable Samples	Risk Level
	Current Land Use and UST or Manifest Information	Former Land Use				
14 Maple Ave.	Brent Gottier Investments	1900	Fire department	--	--	Low
18 Maple Ave.	Office Building	Residential		--	--	Low
19 Maple Ave.	Windsor Town House (hotel)	1961	Bowling Hall	--	--	Low
20 Maple Ave.	Real-estate Attorney	Residential		--	--	Low
21, 23, 25 Maple Avenue and 250 & 252 Broad Street	Windsor Federal Savings and Loan - UST (6,000 gallon capacity heating oil, last used 9-1-1990 permanently closed)	1900	Hayden Hall, Young Ladies Institute	Petroleum products	B-8	Moderate
		1921	Grocery Store			
		1961	Awning Manufacturing			
		1961	Bank			
22 Maple Ave.	Office Building	Residential		--	--	Low
26 Maple Ave.	Hair Salon	1927	American Legion Hall	--	--	Low
27 Maple Ave.	Office Building	Residential		--	--	Low
30, 32, & 34 Maple Ave.	Loomis and Loomis Inc. Consulting Engineers	Residential		--	--	Low
37 Maple Ave.	Hostelling International-AYH	Residential		--	--	Low
56 & 58 Maple Ave.	Better Built Homes, Inc.	Residential		--	--	Low
65 Maple Ave.	Office Building	Residential		--	--	Low
66 Maple	Accountant - Office building - Bagge Cennamo & Co.	Residential		--	--	Low
240 Broad Street	Town Hall, & Parking Lot	1900	Town Hall	--	--	Low
		1921	Town Hall, Post Office, Fire Department, grocery store and drug store	--	--	Low
		1927 & 1947	Town Hall, Drug Store	--	--	Low
		1961	Town Hall	--	--	Low
77 Bloomfield Ave.	St Gabriel's Parochial School - UST closed (3,000 gallon capacity heating oil, last used 8-1-1989 permanently closed) - Manifest for 60 pounds of corrosive wastes 2-16-2001	Residential		Petroleum products	B-5	Moderate
		1961	St Gabriel's Parochial School			

Table 2
Summary of Boring Location Elevations in October 2012
Maple Avenue Sewer Project
The Metropolitan District
Windsor, Connecticut

Direct Push Boring ID	Easting	Northing	Elevation (ft)
B-1	1026704.856	870934.6814	58
B-2	1026958.719	870964.3357	56
B-3	1027377.433	871012.4248	54
B-4	1027627.719	871021.7381	53
B-5	1027901.295	871024.6381	52
B-6	1028198.842	870993.4194	52
B-7	1028488.472	870962.7103	53
B-8	1028723.361	870945.1866	52

Notes:

Eastings and Northings obtained from-CONNECTICUT STATE PLANE NAD 1983

Elevations 2000 LIDAR NAVD 88 FT

Table 3
Summary of Detected Analytes
The Metropolitan District
Maple Avenue Sewer Project
Windsor, Connecticut

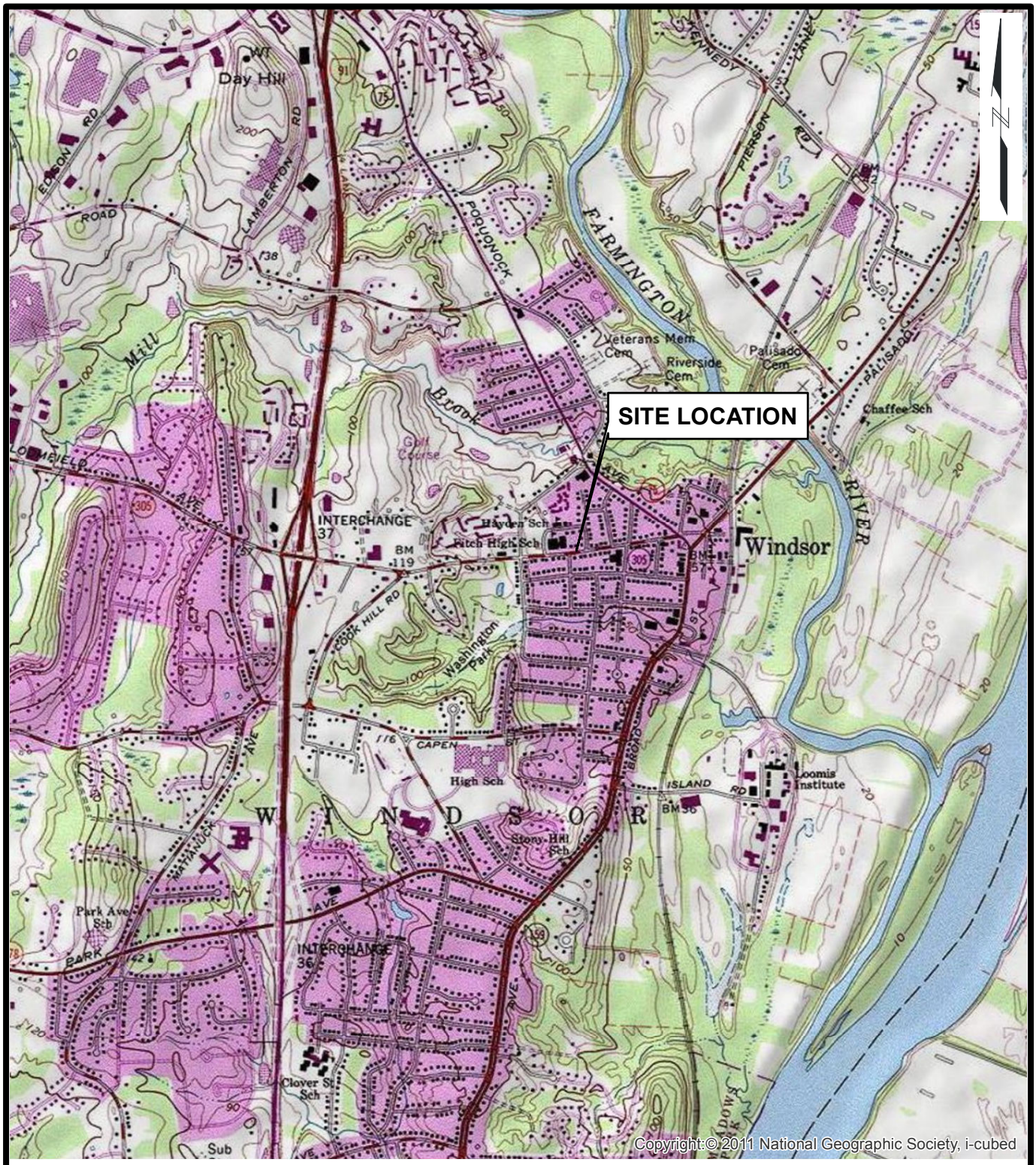
		Sample Name	B-1 1-3 FT	B-2 4-6 FT	B-3 1-3 FT	B-4 4-8 FT	B-5 2-4 FT	B-6 2-4 FT	B-7 5.5-7.5 FT	B-8 2-4 FT
		Sample Interval	1-3'	4-6'	1-3'	4-8'	2-4'	2-4'	5.5-7.5'	2-4'
		Sample Date	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012
Volatile Organic Compounds (VOC) (µg/kg)										
	R-DEC (µg/kg)	GA-PMC (µg/kg)								
Naphthalene	1000000	5600	6.5 U	3100	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Semi-Volatile Organic Compounds (SVOC) (µg/kg)										
	R-DEC (µg/kg)	GA-PMC (µg/kg)								
2-Methylnaphthalene	---	---	500 U	260	260 U	240 U	240 U	250 U	240 U	250 U
Acenaphthylene	1000000	8400	530	300	260 U	240 U	240 U	250 U	240 U	250 U
Anthracene	1000000	40000	630	360	260 U	240 U	240 U	250 U	240 U	250 U
Benz(a)anthracene	1000	1000	**1500**	790	260 U	240 U	240 U	290	240 U	250 U
Benzo(a)pyrene	1000	1000	**1400**	820	260 U	240 U	240 U	270	240 U	250 U
Benzo(b)fluoranthene	1000	1000	**1600**	990	260 U	240 U	240 U	380	240 U	250 U
Benzo(ghi)perylene	---	---	500 U	330	260 U	240 U	240 U	250 U	240 U	250 U
Benzo(k)fluoranthene	8400	1000	500 U	390	260 U	240 U	240 U	250 U	240 U	250 U
Chrysene	---	---	1700	860	260 U	240 U	240 U	280	240 U	250 U
Fluoranthene	1000000	5600	2300	1600	260 U	240 U	240 U	550	240 U	250 U
Fluorene	1000000	5600	500 U	310	260 U	240 U	240 U	250 U	240 U	250 U
Indeno(1,2,3-cd)pyrene	---	---	500 U	290	260 U	240 U	240 U	250 U	240 U	250 U
Naphthalene	1000000	5600	500 U	380	260 U	240 U	240 U	250 U	240 U	250 U
Phenanthrene	1000000	4000	2800	1500	260 U	240 U	240 U	250 U	240 U	250 U
Pyrene	1000000	4000	3400	1600	260 U	240 U	240 U	520	240 U	250 U
Polychlorinated Biphenyls (PCB) (µg/kg)										
	R-DEC (µg/kg)	GA-PMC (µg/kg)								
Total PCB's	1000	---	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
Total Metals (mg/kg)										
	R-DEC (mg/kg)	GA-PMC (mg/kg)								
Lead	500	---	5.23	3.39	6.12	2.22	3.93	17.4	5.73	3.86
Nickel	1400	---	16.6	9.56	9.83	9.45	7.07	9.85	6.78	5.99
Arsenic	10	---	3	1.8	1.6	1	1.2	1.1	0.7 U	1.3
Barium	4700	---	54.6	29.6	40.6	20.3	24.5	33.5	13.4	32.7
Chromium	3900	---	16.3	12.2	12.1	9.48	10.5	10.6	5.47	8
Copper	2500	---	23.8	12.1	13.5	5.8	4.03	10.7	5.83	6.89
Zinc	20000	---	59.8	22	34.7	13.6	18.6	23.3	14.4	19.4
Total Petroleum Hydrocarbons (ETPH) (mg/Kg)										
	R-DEC (mg/kg)	GA-PMC (mg/kg)								
Ext. Petroleum HC	500	500	11 U	33	11 U	10 U	10 U	11 U	10 U	10 U
Waste Characterization Parameter										
	Hazardous Waste Criteria									
Reactivity Cyanide (mg/Kg)	---		5.4 U	5.4 U	5.3 U	5.2 U	5.1 U	5.3 U	5.2 U	5.3 U
Reactivity Sulfide (mg/Kg)	---		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
pH - Soil (S.U.)	<2 or >12.5		8.65	8.48	8.36	6.75	5.79	7.02	6.27	7.37
Conductivity - Soil Matrix (umhos/cm)	---		420	280	310	360	130	160	370	360
Flash Point (degrees F)	<140° F		200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U
TCLP Lead (mg/L)	5 mg/L		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

Table 3
Summary of Detected Analytes
The Metropolitan District
Maple Avenue Sewer Project
Windsor, Connecticut

Notes:

Values in Bold text exceed R-DEC or GA-PMC
mg/kg - milligrams/kilogram or parts per million (ppm)
µg/kg - micrograms/kilogram or parts per billion (ppb)
mg/L - milligrams/liter
S.U. - Standard Units
TCLP- toxicity characteristics leaching procedure
U - indicates not detected at or above the reporting limit shown
--- None Established or Not Applicable
R-DEC - Residential Direct Exposure Criteria
GA-PMC - GA Groundwater Classification Area Pollutant Mobility Criteria
Only parameters detected in at least one sample are included in table

Figures

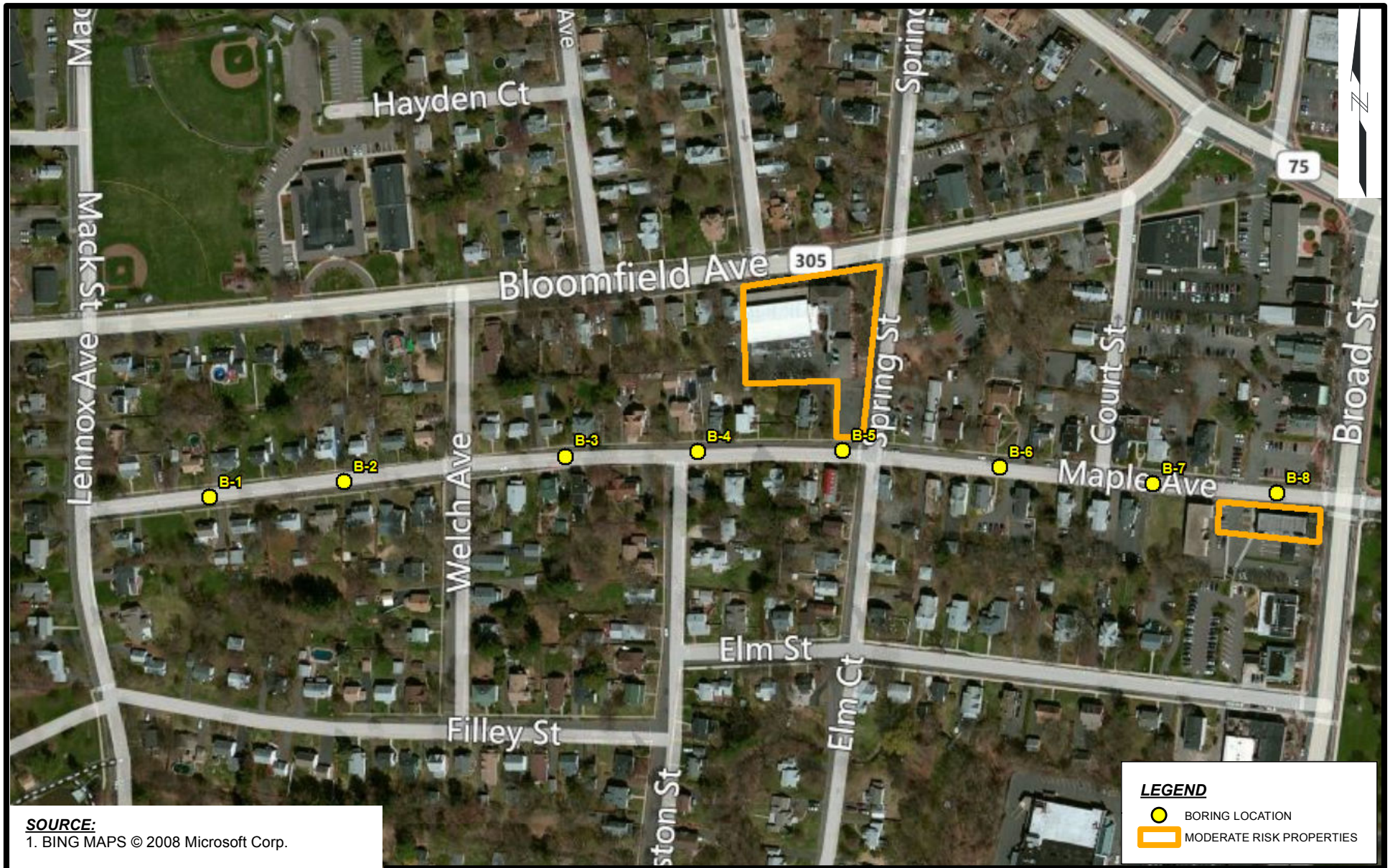


SOURCE:
1. TOPOGRAPHIC MAP (c) NATIONAL GEOGRAPHIC TOPO! ACCESSED VIA ARGGIS ONLINE.

0 1,000 2,000 4,000
SCALE, FEET

MAPLE AVENUE SEWER PROJECT WINDSOR, CONNECTICUT	GEI Consultants	**SITE LOCATION MAP**
THE METROPOLITAN DISTRICT COMMISSION HARTFORD, CONNECTICUT	Project 123290-2-1001	Novmber 2012 Figure 1

J:\Projects\MDC\Maple_Ave\site_location.mxd



SOURCE:
1. BING MAPS © 2008 Microsoft Corp.

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SCALE, FEET

MAPLE AVENUE
SEWER PROJECT
WINDSOR, CONNECTICUT

THE METROPOLITAN DISTRICT COMMISSION
HARTFORD, CONNECTICUT

GEI Consultants

Project 123290-2-1001

MODERATE RISK PROPERTIES

November 2012 Figure 2

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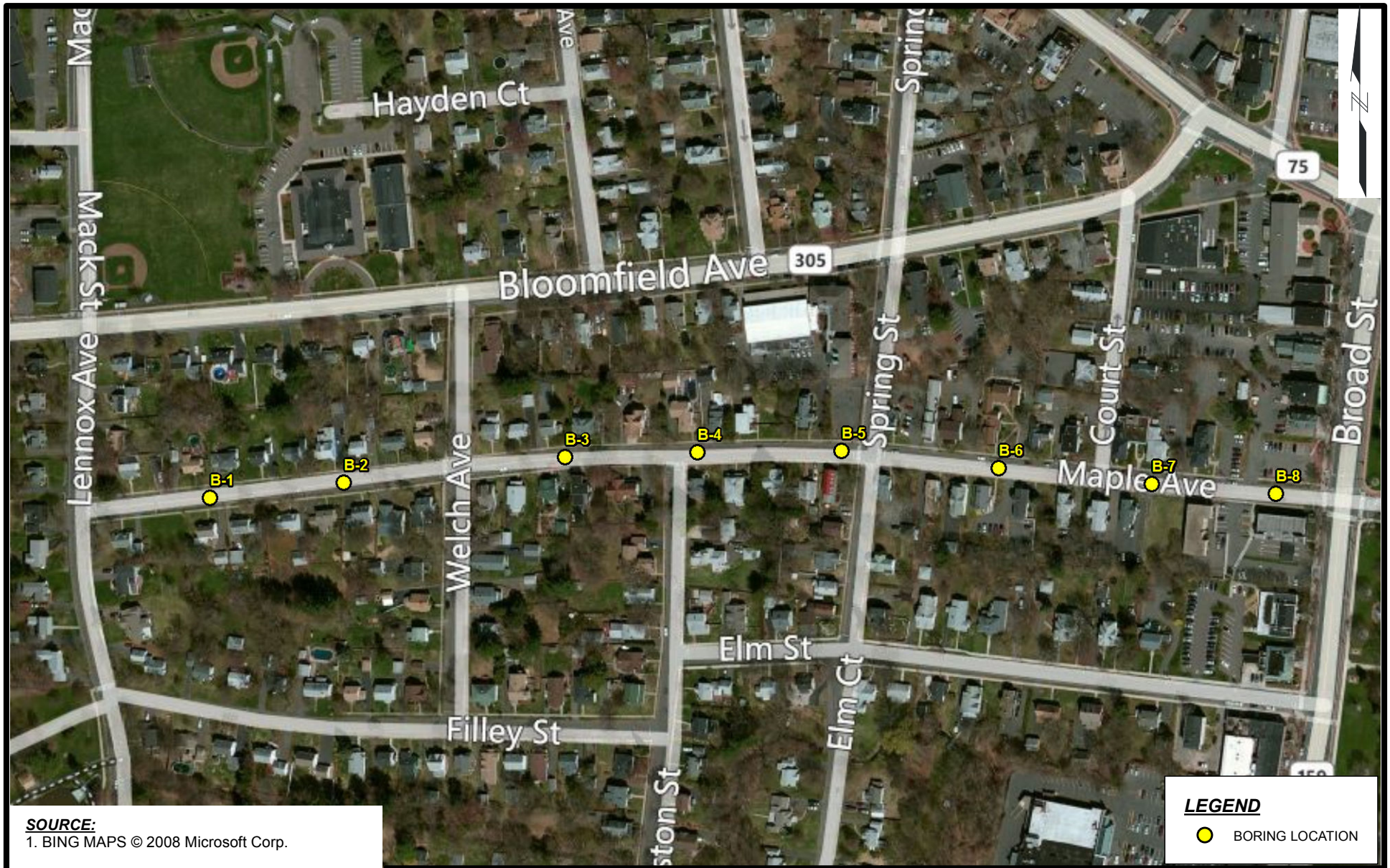

SOURCE:
1. BING MAPS © 2008 Microsoft Corp.

0 350 700
SCALE, FEET

MAPLE AVENUE
SEWER PROJECT
WINDSOR, CONNECTICUT

THE METROPOLITAN DISTRICT COMMISSION
HARTFORD, CONNECTICUT

GEI Consultants

BORING LOCATION PLAN
MAPLE AVENUE

Project 123290-2-1001 | November 2012 | Figure 3

J:\Projects\MDC\Maple_Ave\boring_loc.mxd

Appendix A

Portions of Environmental Data Resources, Inc. Report

Maple Avenue
MAPLE AVE
Windsor, CT 06095

Inquiry Number: 3444814.3
November 01, 2012

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/01/12

Site Name:
Maple Avenue
MAPLE AVE
Windsor, CT 06095

Client Name:
GEI Consultants Inc.
455 Winding Brook Drive
Glastonbury, CT 06033

EDR Inquiry # 3444814.3

Contact: Christine Benetti

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by GEI Consultants Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Maple Avenue
Address: MAPLE AVE
City, State, Zip: Windsor, CT 06095
Cross Street:
P.O. # 10614
Project: Maple Ave
Certification # A80E-46F1-8DD0

Maps Provided:

1961
1947
1927
1921
1900

Sanborn® Library search results
Certification # A80E-46F1-8DD0

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Sanborn Sheet Thumbnails

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1961 Source Sheets

Volume 1, Sheet 2

Volume 1, Sheet 3

Volume 1, Sheet 4

Volume 1, Sheet 5

1947 Source Sheets

Volume 1, Sheet 2

Volume 1, Sheet 3

Volume 1, Sheet 4

Volume 1, Sheet 5

1927 Source Sheets

Volume 1, Sheet 2

Volume 1, Sheet 3

Volume 1, Sheet 4

Volume 1, Sheet 5

1921 Source Sheets

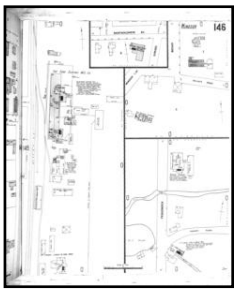
Volume 1, Sheet 3

Volume 1, Sheet 4

Volume 1, Sheet 5

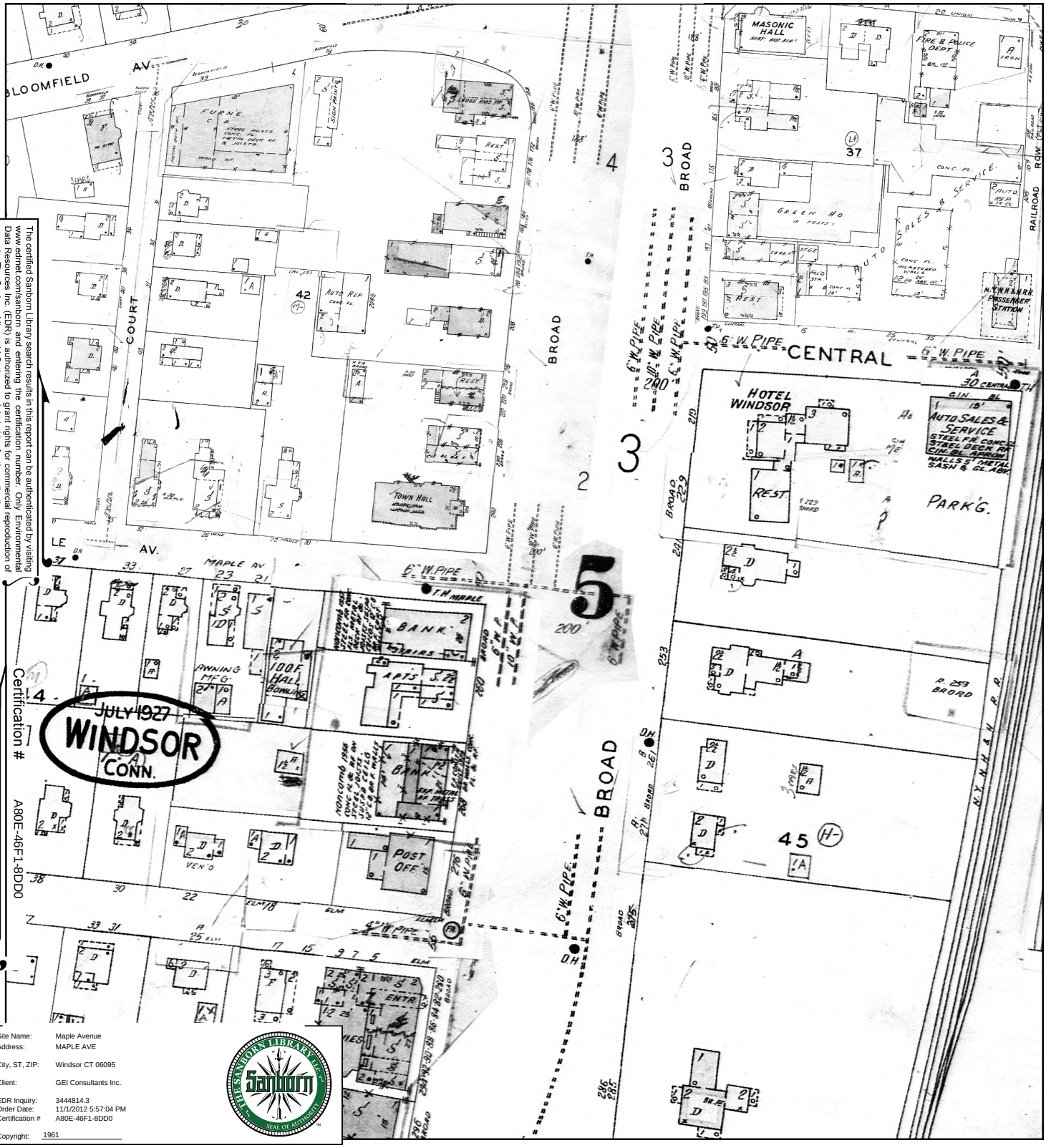
1900 Source Sheets

Volume 2, Sheet 145



Volume 2, Sheet 146

1961 Certified Sanborn Map



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Site Name:	Maple Avenue
Address:	MAPLE AVE
City, ST, ZIP:	Windsor CT 06095
Client:	GEI Consultants Inc.
EDR Inquiry:	3444814.3
Order Date:	11/1/2012 5:57:04 PM
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Copyright:	1961

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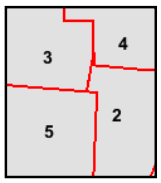

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Volume 1, Sheet 3
Volume 1, Sheet 4
Volume 1, Sheet 5

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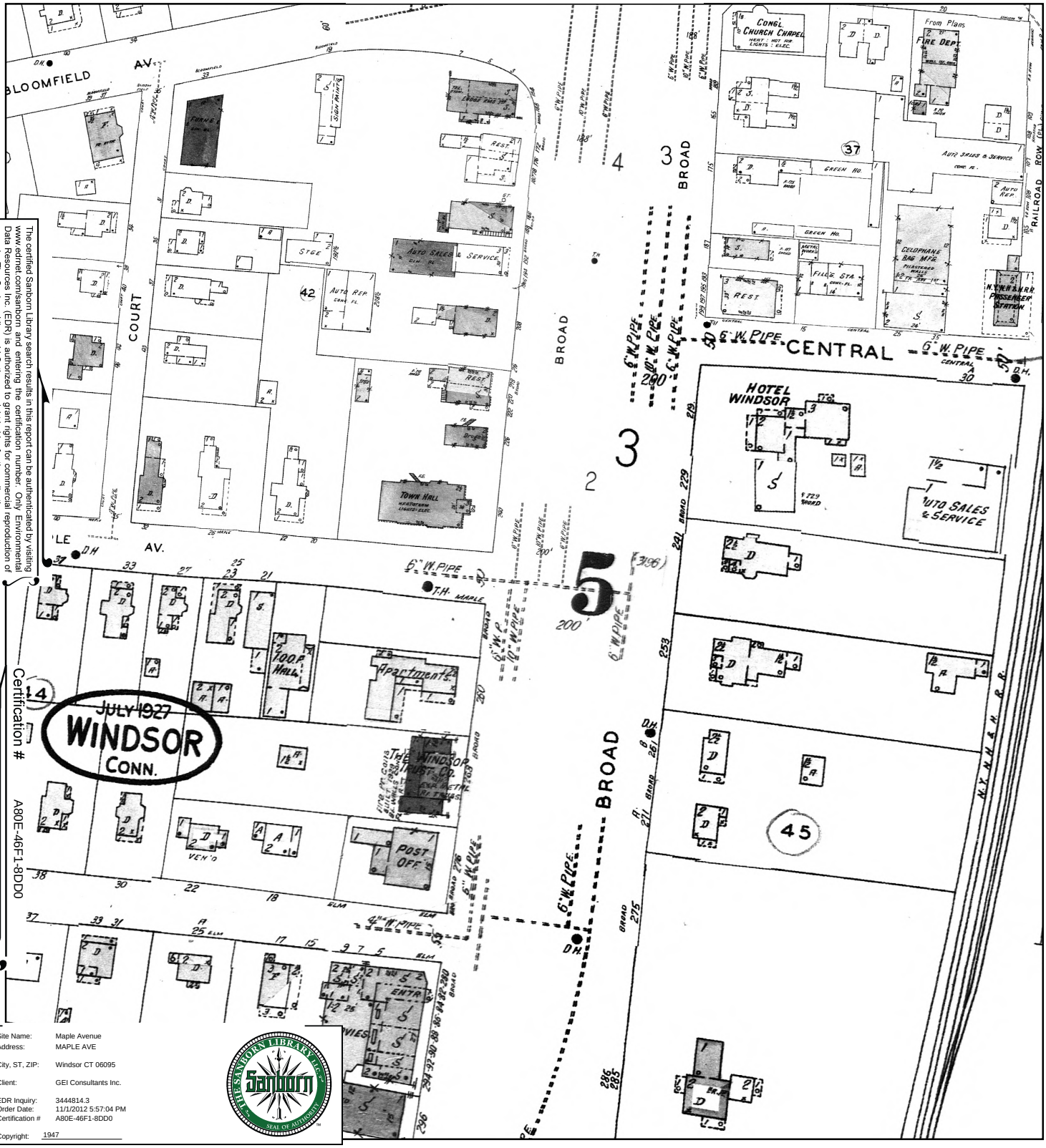
3444814 - 3 page 5

1947 Certified Sanborn Map



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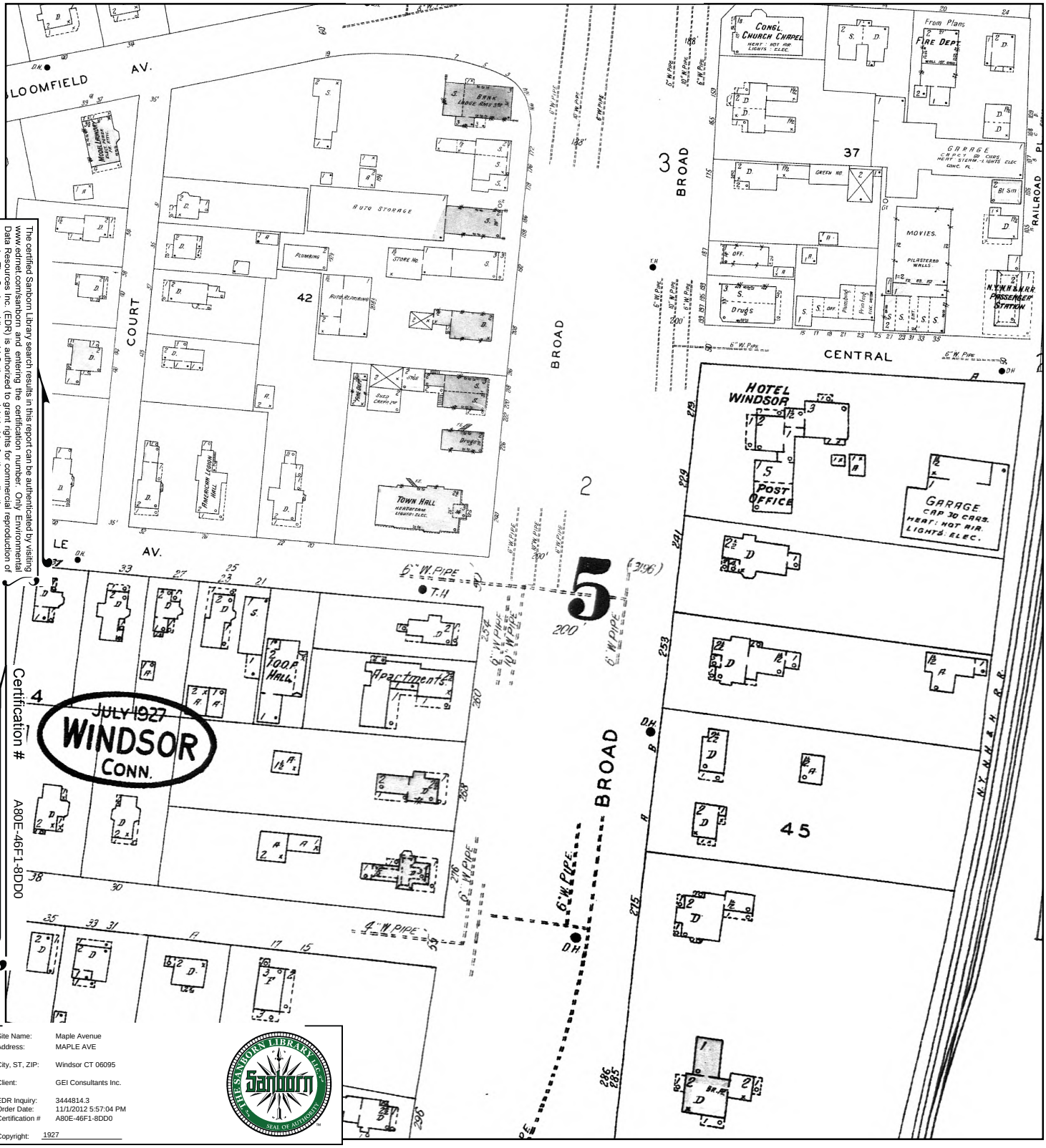
3444814 - 3 page 6

1927 Certified Sanborn Map



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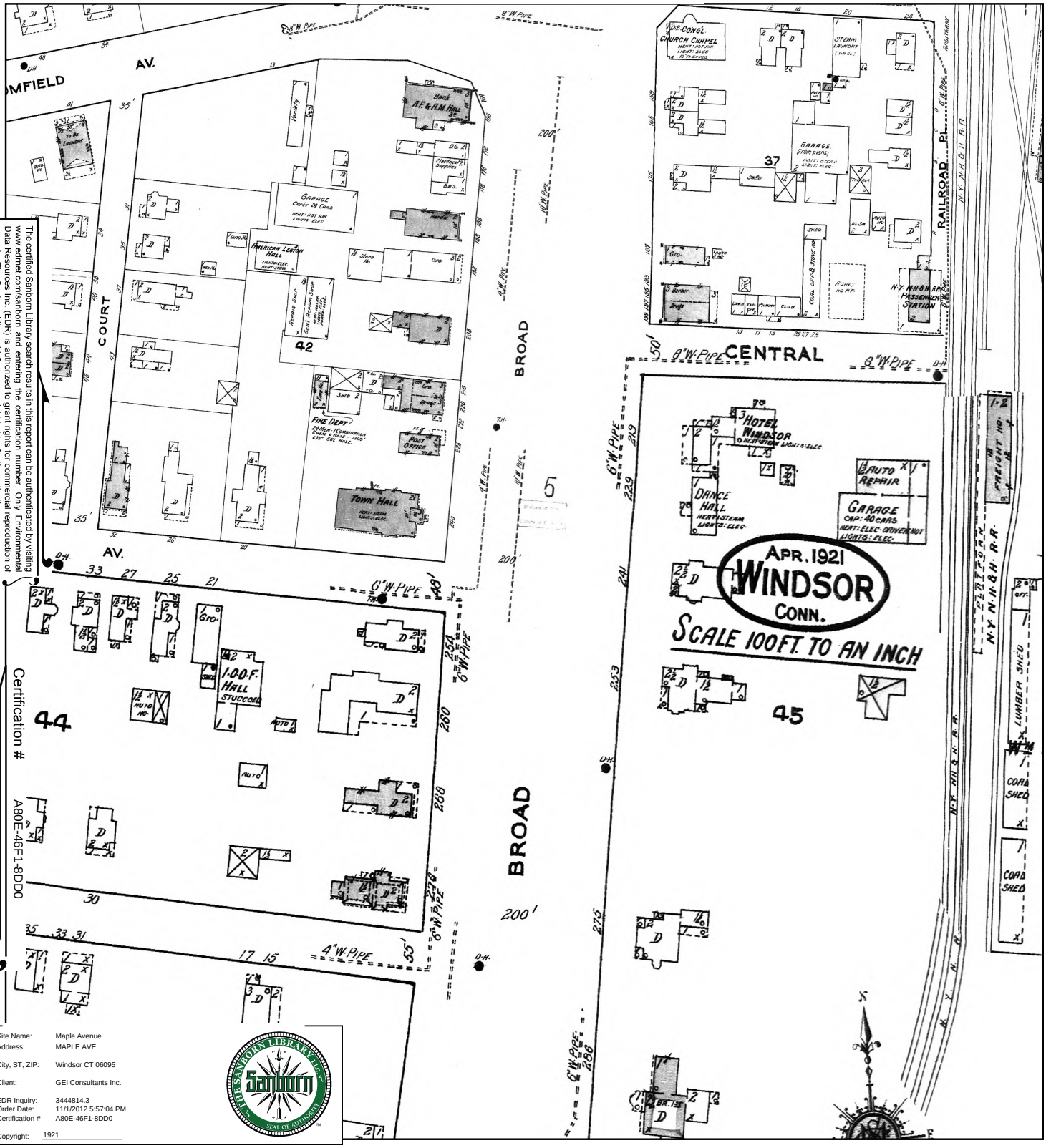
1921 Certified Sanborn Map



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City, ST, ZIP:	Windsor CT 06095
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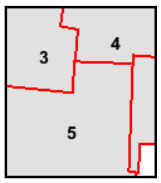

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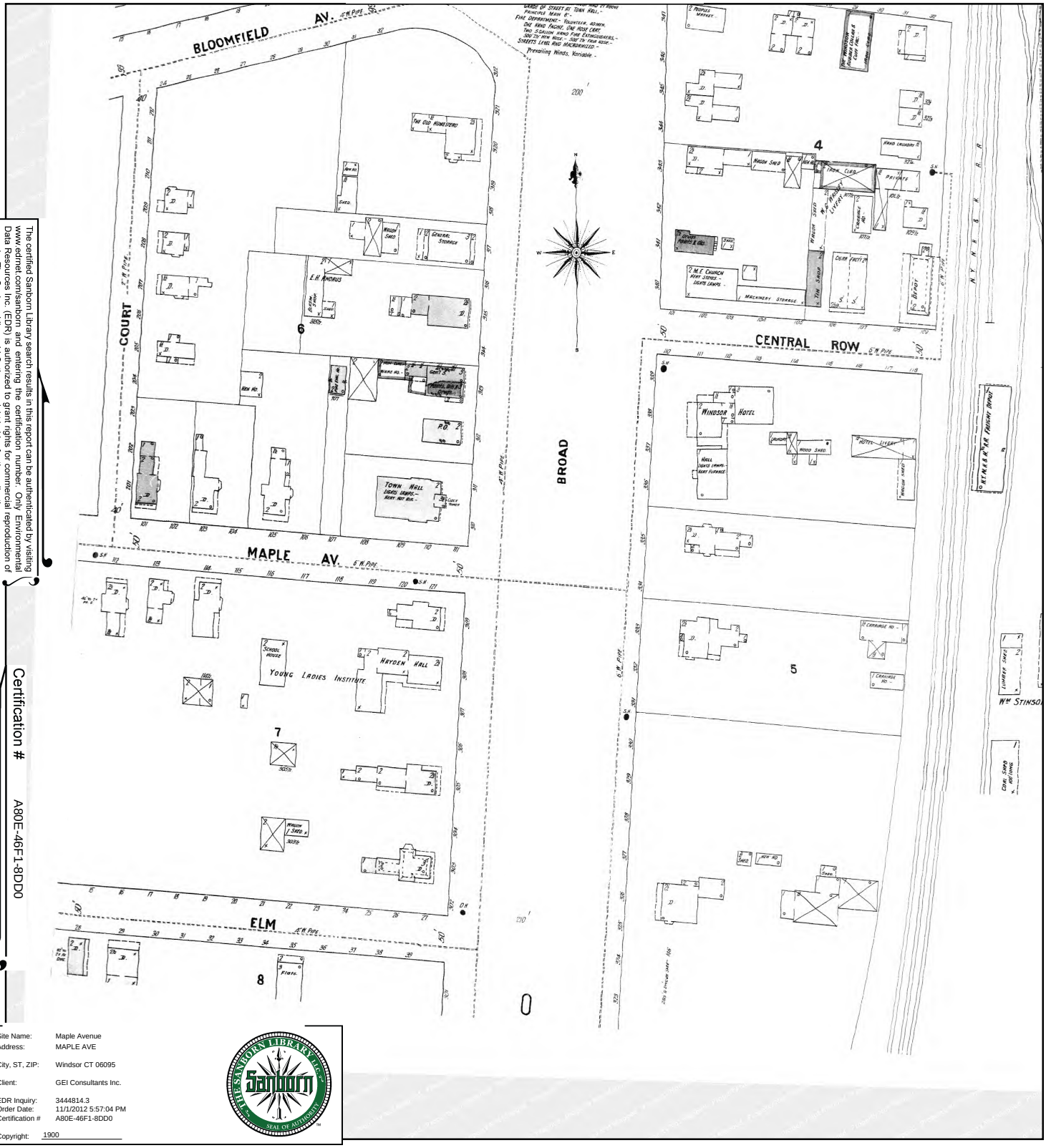

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Address:	MAPLE AVE
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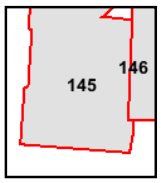

Volume 2, Sheet 145
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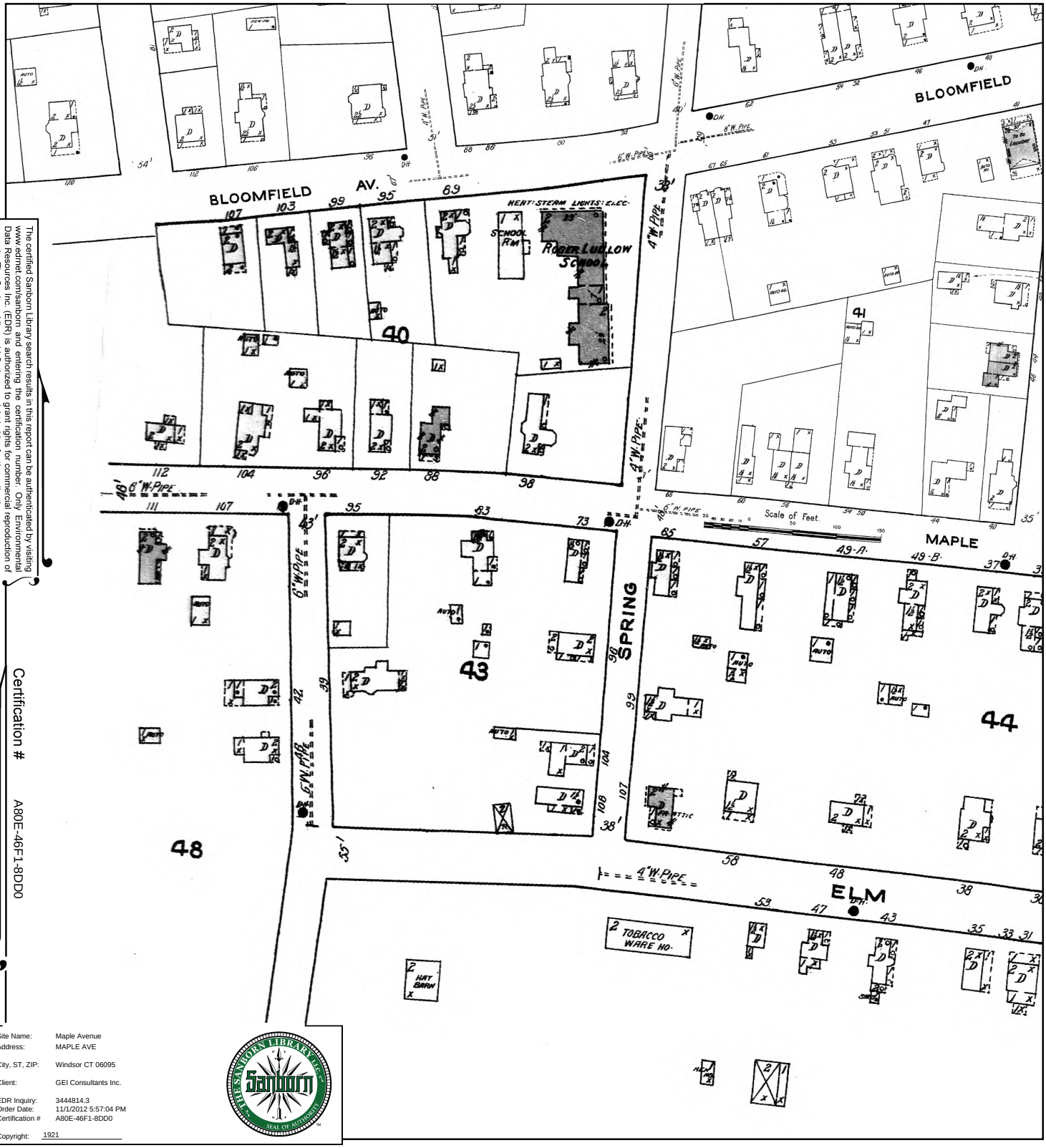
3444814 - 3 page 9

1921 Certified Sanborn Map



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Site Name:	Maple Avenue
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Client:	GEI Consultants Inc.
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Order Date:	11/1/2012 5:57:04 PM
Certification #	A80E-46F1-8DD0
Copyright:	1921

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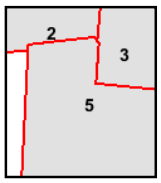

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Volume 1, Sheet 3
Volume 1, Sheet 5

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Maple Avenue
MAPLE AVE
Windsor, CT 06095

Inquiry Number: 3444814.3
November 01, 2012

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/01/12

Site Name:
Maple Avenue
MAPLE AVE
Windsor, CT 06095

Client Name:
GEI Consultants Inc.
455 Winding Brook Drive
Glastonbury, CT 06033

EDR Inquiry # 3444814.3

Contact: Christine Benetti

EDR® Environmental Data Resources Inc

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Certified Sanborn Results:

Site Name: Maple Avenue
Address: MAPLE AVE
City, State, Zip: Windsor, CT 06095
Cross Street:
P.O. # 10614
Project: Maple Ave
Certification # A80E-46F1-8DD0

Maps Provided:

1961
1947
1927
1921

Sanborn® Library search results
Certification # A80E-46F1-8DD0

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Sanborn Sheet Thumbnails

This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.

1961 Source Sheets

Volume 1, Sheet 2

Volume 1, Sheet 5

1947 Source Sheets

Volume 1, Sheet 2

Volume 1, Sheet 5

1927 Source Sheets

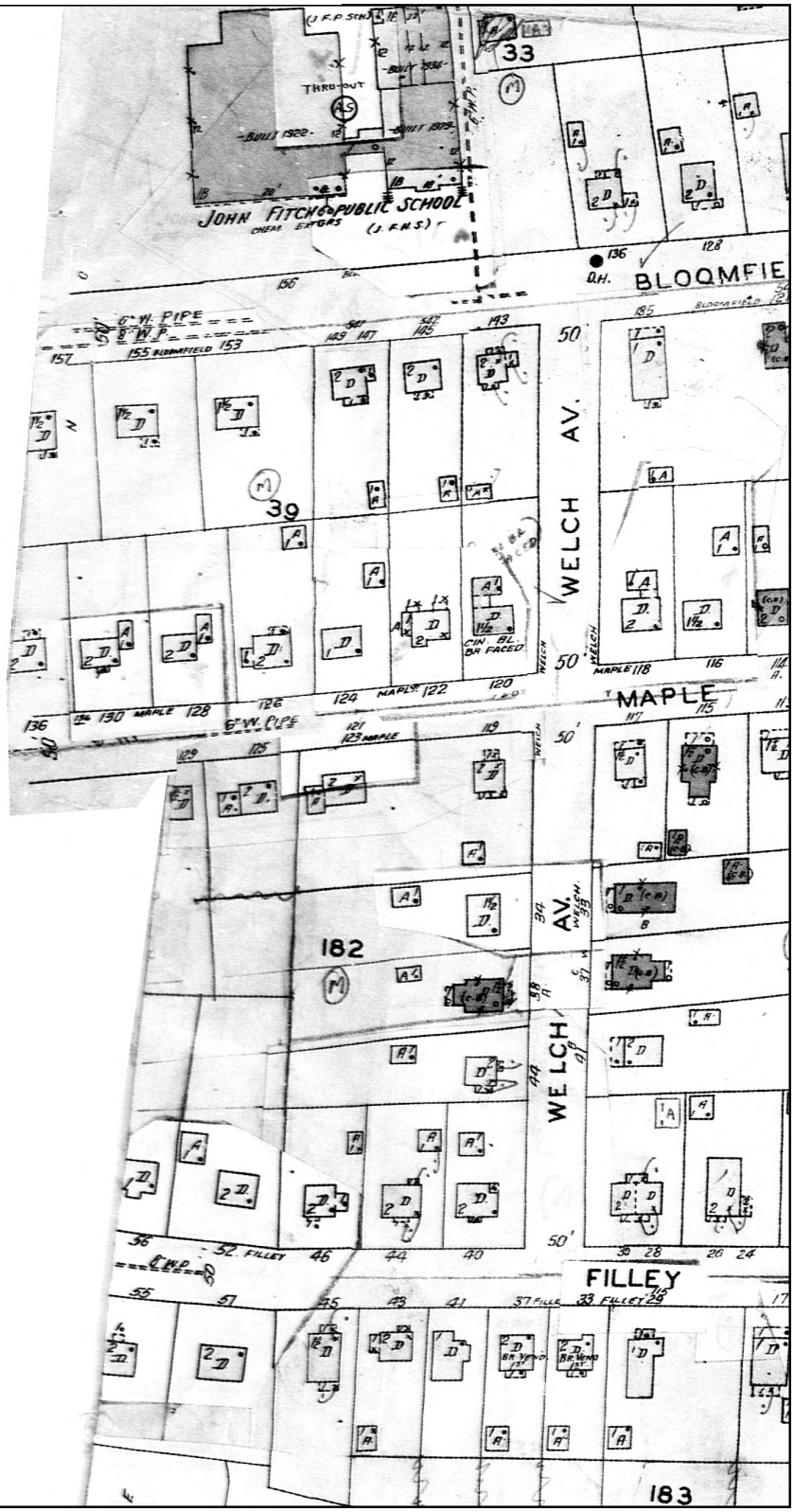
Volume 1, Sheet 2

Volume 1, Sheet 5

1921 Source Sheets

Volume 1, Sheet 2

1961 Certified Sanborn Map



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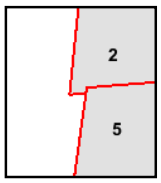
Certification # A80E-46F1-8DD0

Site Name:	Maple Avenue
Address:	MAPLE AVE
City, ST, ZIP:	Windsor CT 06095
Client:	GEI Consultants Inc.
EDR Inquiry:	3444814.3
Order Date:	11/1/2012 5:57:04 PM
Certification #	A80E-46F1-8DD0
Copyright:	1961

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.



Volume 1, Sheet 2
Volume 1, Sheet 5

0 Feet 165 330 660

N

3444814 - 3 page 13

1947 Certified Sanborn Map

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Site Name: Maple Avenue
Address: MAPLE AVE
City, ST, ZIP: Windsor CT 06095
Client: GEI Consultants Inc.
EDR Inquiry: 3444814.3
Order Date: 11/1/2012 5:57:04 PM
Certification # A80E-46F1-8DD0
Copyright: 1947

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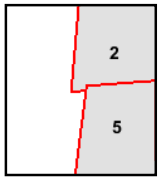


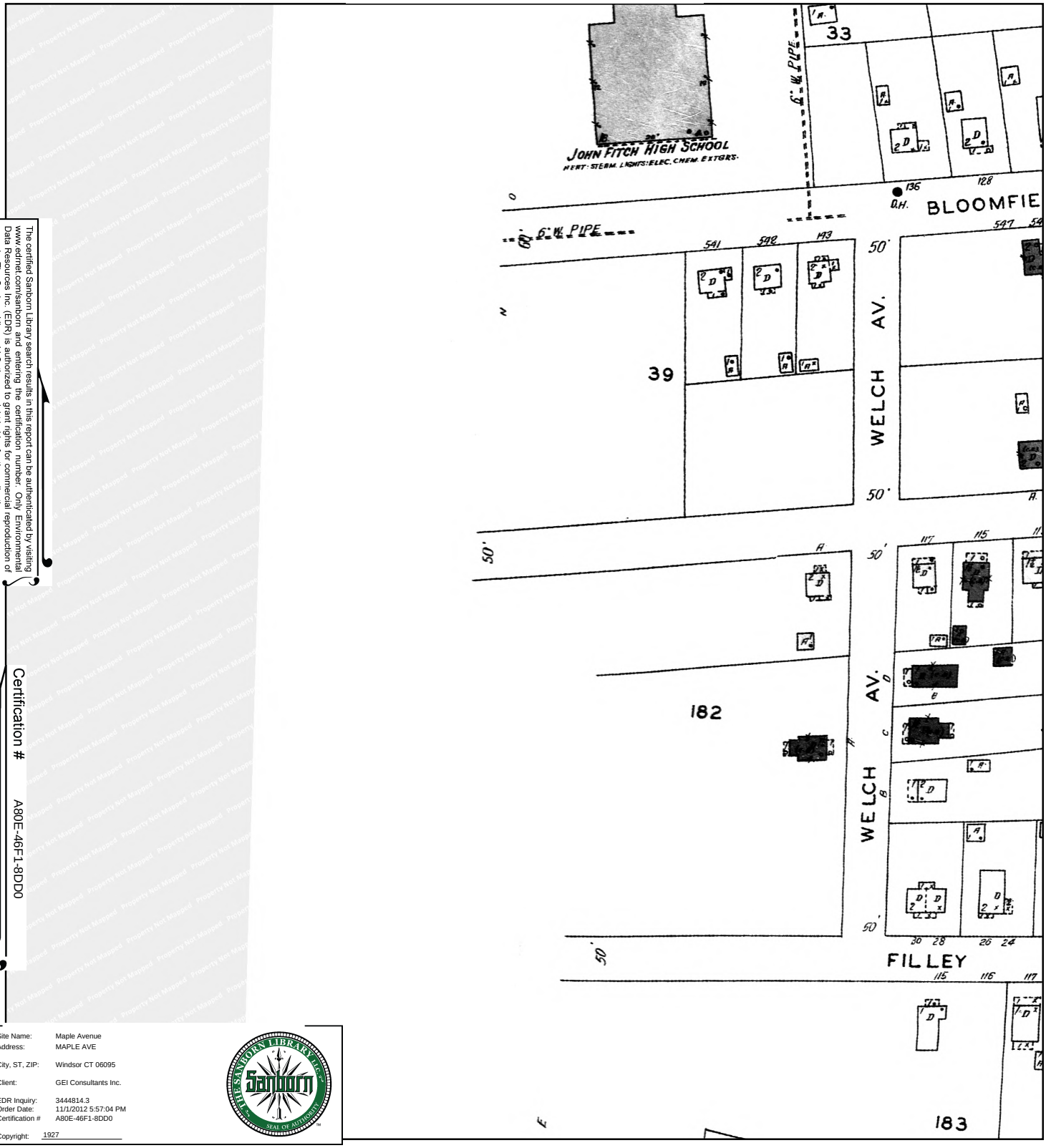
Volume 1, Sheet 2
Volume 1, Sheet 5

0 Feet 165 330 660

N

3444814 - 3 page 14

1927 Certified Sanborn Map



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City, ST, ZIP:	Windsor CT 06095
Client:	GEI Consultants Inc.
EDR Inquiry:	3444814.3
Order Date:	11/1/2012 5:57:04 PM
Certification #	A80E-46F1-8DD0
Copyright:	1927

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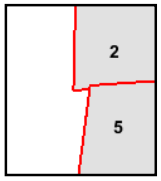
0 Feet 165 330 660

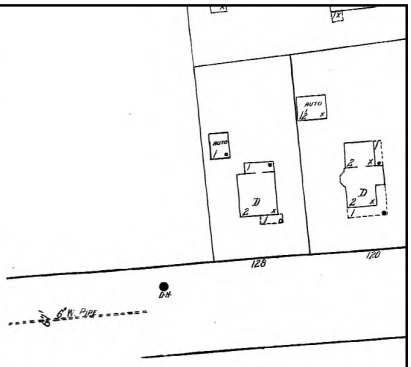


Volume 1, Sheet 2
Volume 1, Sheet 5

N

3444814 - 3 page 15

1921 Certified Sanborn Map



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Certification # A80E-46F1-8DD0

Site Name: Maple Avenue
Address: MAPLE AVE
City, ST, ZIP: Windsor CT 06095
Client: GEI Consultants Inc.
EDR Inquiry: 3444814.3
Order Date: 11/1/2012 5:57:04 PM
Certification # A80E-46F1-8DD0
Copyright: 1921

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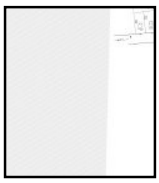

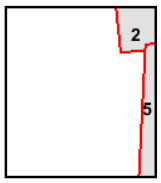

Volume 1, Sheet 2

0 Feet 165 330 660

N

3444814 - 3 page 16

Maple Avenue
MAPLE AVE
Windsor, CT 06095

Inquiry Number: 3444814.3
November 01, 2012

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/01/12

Site Name:
Maple Avenue
MAPLE AVE
Windsor, CT 06095

Client Name:
GEI Consultants Inc.
455 Winding Brook Drive
Glastonbury, CT 06033

EDR Inquiry # 3444814.3

Contact: Christine Benetti

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by GEI Consultants Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

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Address: MAPLE AVE
City, State, Zip: Windsor, CT 06095
Cross Street:
P.O. # 10614
Project: Maple Ave
Certification # A80E-46F1-8DD0

Maps Provided:

1961
1947
1927
1921

Sanborn® Library search results
Certification # A80E-46F1-8DD0

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Volume 1, Sheet 2

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Volume 1, Sheet 3

Volume 1, Sheet 5

1927 Source Sheets

Volume 1, Sheet 2

Volume 1, Sheet 3

Volume 1, Sheet 5

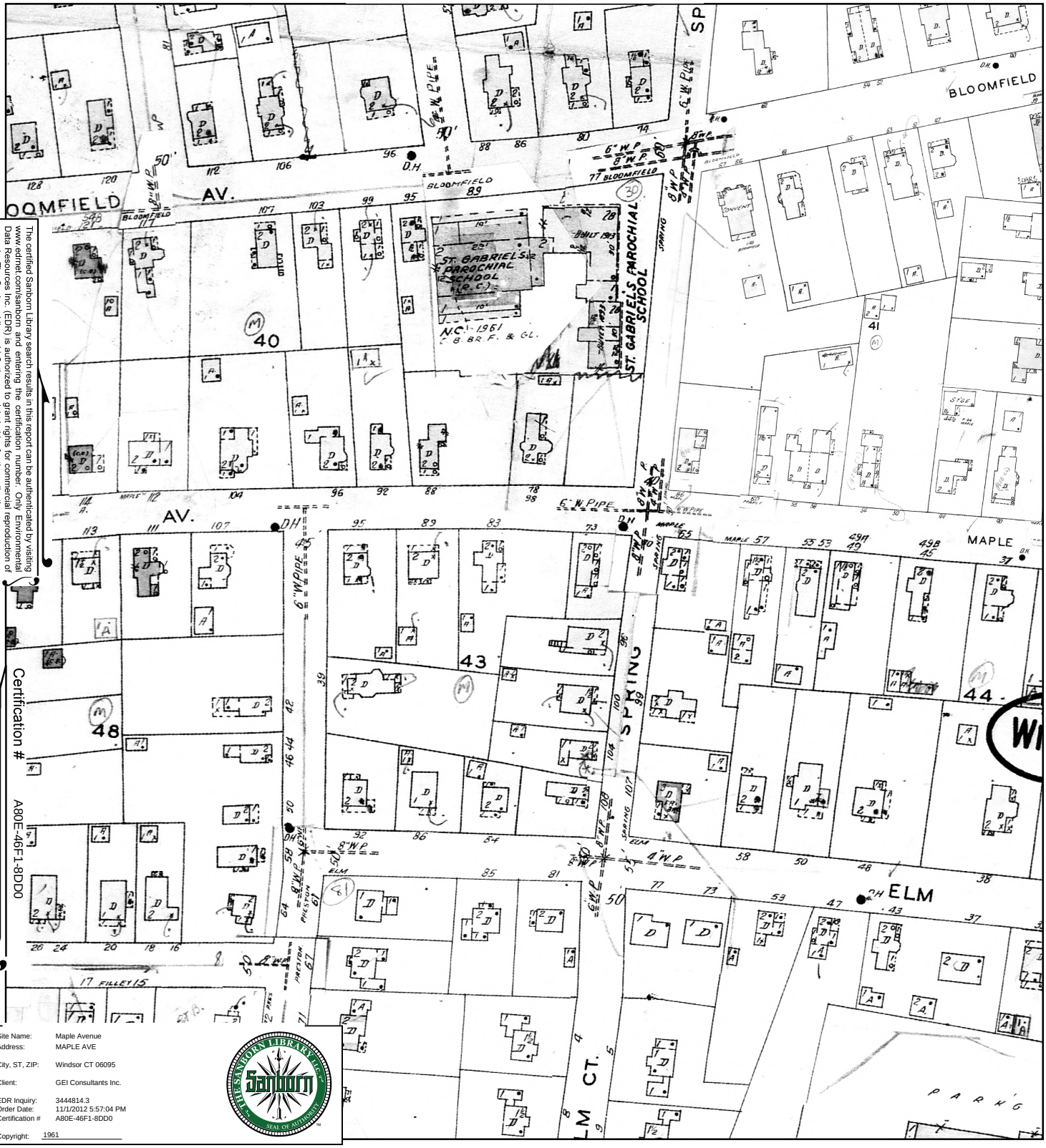
1921 Source Sheets

Volume 1, Sheet 2

Volume 1, Sheet 3

Volume 1, Sheet 5

1961 Certified Sanborn Map



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Site Name:	Maple Avenue
Address:	MAPLE AVE
City, ST, ZIP:	Windsor CT 06095
Client:	GEI Consultants Inc.
EDR Inquiry:	3444814.3
Order Date:	11/1/2012 5:57:04 PM
Certification #	A80E-46F1-8DD0
Copyright:	1961

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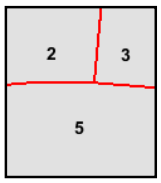
0 Feet 165 330 660



Volume 1, Sheet 2
Volume 1, Sheet 3
Volume 1, Sheet 5

N

3444814 - 3 page 20

1947 Certified Sanborn Map

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Certification # A80E-46F1-8DD0

Site Name:	Maple Avenue
Address:	MAPLE AVE
City, ST, ZIP:	Windsor CT 06095
Client:	GEI Consultants Inc.
EDR Inquiry:	3444814.3
Order Date:	11/1/2012 5:57:04 PM
Certification #	A80E-46F1-8DD0
Copyright:	1947

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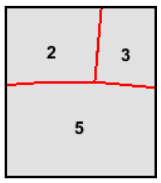
0 Feet 165 330 660



Volume 1, Sheet 2
Volume 1, Sheet 3
Volume 1, Sheet 5

N

1927 Certified Sanborn Map

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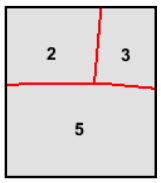
City, ST, ZIP:	Windsor CT 06095
Client:	GEI Consultants Inc.
EDR Inquiry:	3444814.3
Order Date:	11/1/2012 5:57:04 PM
Certification #	A80E-46F1-8DD0
Copyright:	1927

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 165 330 660



Volume 1, Sheet 2
Volume 1, Sheet 3
Volume 1, Sheet 5

N

B11 WNW < 1/8 0.040 mi. 210 ft. **SAINT GABRIEL SCHOOL 77 BLOOMFIELD AVE WINDSOR, CT 06095** **UST** **U002025796 N/A**

Site 1 of 2 in cluster B

Relative: Higher

Actual: 71 ft.

UST:

Facility Id:	9633
Alt. Facility ID:	164-9633
Latitude:	Not reported
Longitude:	Not reported
Owner:	SAINT GABRIEL R.C., CHURCH CORPORATION
Owner Address:	379 BROAD ST
Owner Address 2:	Not reported
Owner City,St,Zip:	WINDSOR, CT 060953004
Tank ID:	9633-1
Compartment ID:	9633-1
Compartment Num:	1
Alt. Tank ID:	A1
Tank Status:	**Permanently Closed**
Tank Material:	Asphalt Coated or Bare Steel
Secondary Material:	Not reported
Capacity:	3000
Substance:	Heating Oil
Date Installed:	08/01/1958
Date Last Used:	08/01/1989
Closure Status:	**Tank Filled with Inert Material**
Pipe Material:	Bare or Galvonized Steel
Pipe Mode Description:	Not reported
Spill Installed:	Not reported
Overfill Installed:	Not reported

B12 WNW < 1/8 0.040 mi. 210 ft. **SAINT GABRIEL SCHOOL 77 BLOOMFIELD AVE WINDSOR, CT 06095** **MANIFEST** **1009221203 N/A**

Site 2 of 2 in cluster B

Relative: Higher

Actual: 71 ft.

NY MANIFEST:

EPA ID:	CTP606886401
Country:	USA
Mailing Name:	SAINT GABRIEL SCHOOL
Mailing Contact:	DR FLEMING ALLAIRE
Mailing Address:	77 BLOOMFIELD AVE
Mailing Address 2:	Not reported
Mailing City:	WINDSOR
Mailing State:	CT
Mailing Zip:	06095
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	960-688-6401
Document ID:	NYG2402271
Manifest Status:	Not reported
Trans1 State ID:	CTD016424210
Trans2 State ID:	Not reported
Generator Ship Date:	12/20/2000
Trans1 Recv Date:	12/21/2000

SAINT GABRIEL SCHOOL (Continued) **1009221203**

Trans2 Recv Date:	Not reported
TSD Site Recv Date:	02/16/2001
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	CTP606886401
Trans1 EPA ID:	NYD057770109
Trans2 EPA ID:	Not reported
TSDF ID:	Not reported
Waste Code:	D002 - NON-LISTED CORROSIVE WASTES
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	01.00
Year:	2000

C13 **BILL SELIG FORD INC** **UST** **U002173671**
NE **15 CENTRAL ST** **N/A**
< 1/8 **WINDSOR, CT 06095**
0.062 mi.
326 ft. **Site 1 of 3 in cluster C**

Relative:
Lower

Actual:
56 ft.

UST:

Facility Id:	4085
Alt. Facility ID:	164-4085
Latitude:	Not reported
Longitude:	Not reported
Owner:	BILL SELIG FORD, INC.
Owner Address:	801 BLOOMFIELD AVE
Owner Address 2:	Not reported
Owner City,St,Zip:	WINDSOR, CT 060952301
Tank ID:	4085-1
Compartment ID:	4085-1
Compartment Num:	1
Alt. Tank ID:	A1
Tank Status:	**Permanently Closed**
Tank Material:	Asphalt Coated or Bare Steel
Secondary Material:	Not reported
Capacity:	3000
Substance:	Gasoline
Date Installed:	01/01/1971
Date Last Used:	02/01/1982
Closure Status:	**Tank was Removed From Ground**
Pipe Material:	Bare or Galvonized Steel
Pipe Mode Description:	Not reported
Spill Installed:	Not reported
Overfill Installed:	Not reported
Tank ID:	4085-2
Compartment ID:	4085-2
Compartment Num:	1
Alt. Tank ID:	B2
Tank Status:	**Permanently Closed**
Tank Material:	Asphalt Coated or Bare Steel
Secondary Material:	Not reported

A1 **WINDSOR FEDERAL SAVINGS & LOAN ASSOC.** **UST** **U002176610**
250 BROAD ST **N/A**
< 1/8 **WINDSOR, CT 06095**
1 ft.

Site 1 of 8 in cluster A

Relative: Higher

Actual: 65 ft.

UST:

Facility Id:	9634
Alt. Facility ID:	164-9634
Latitude:	Not reported
Longitude:	Not reported
Owner:	WINDSOR FEDERAL SAVINGS & LOAN ASSOC.
Owner Address:	250 BROAD ST
Owner Address 2:	Not reported
Owner City,St,Zip:	WINDSOR, CT 060952937
Tank ID:	9634-1
Compartment ID:	9634-1
Compartment Num:	1
Alt. Tank ID:	A1
Tank Status:	**Permanently Closed**
Tank Material:	Asphalt Coated or Bare Steel
Secondary Material:	Not reported
Capacity:	6000
Substance:	Heating Oil
Date Installed:	05/01/1960
Date Last Used:	09/01/1990
Closure Status:	**Tank Filled with Inert Material**
Pipe Material:	Other (Specify)
Pipe Mode Description:	Not reported
Spill Installed:	Not reported
Overfill Installed:	Not reported

A2 **LEO BRUYETTE** **MANIFEST** **S109721583**
230 BROAD ST. **N/A**
< 1/8 **WINDSORD, CT 06095**
1 ft.

Site 2 of 8 in cluster A

Relative: Lower

Actual: 62 ft.

CT MANIFEST:

Waste:

Manifest No:	CTF0044150
Waste Occurence:	1
UNNA:	9189
Hazard Class:	ORM-E
US Dot Description:	HAZRDOUS WASTE LIQUID, NOS
No of Containers:	001
Container Type:	CF
Quantity:	2
Weight/Volume:	G
Additional Description:	Y
Handling Code:	Not reported
Date Record Was Last Modified:	4/27/2004
DEO Who Last Modified Record:	IG

Waste CD:

Manifest No:	CTF0044150
Waste Occurence:	1
EPA Waste Code:	D011

Appendix B

Boring Logs

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Metropolitan District
PROJECT: MDC Water Main Replacement
CITY/STATE: Hartford, CT
GEI PROJECT NUMBER: 123290-*-1001

BORING LOG

PAGE 1 of 1

B-1

GROUND SURFACE ELEVATION (FT): 58
LOCATION: Maple Avenue
NORTHING: 870934.6814 **EASTING:** 1026704.856
TOTAL DEPTH (FT): 8.00
DRILLED BY: Geologic Earth Exploration, Inc
DATUM VERT. / HORZ.: NAVD 88 / NAD83 CT
LOGGED BY: C. Benetti
DATE START / END: 10/2/2012
DRILLING DETAILS: Geoprobe / Track-mounted Geoprobe
WATER LEVEL DEPTHS (FT): 4/16/2012

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0	1	4.0	46	0.0			(0'- 1') ASPHALT.
				0.0			
				0.0		B-1 (1-3)'	(1'- 2.5') SILTY SAND WITH GRAVEL (SM); ~65% sand, fine to coarse, ~20% gravel, fine to coarse, ~15% fines; moist, brown, FILL.
				0.0			
				0.0			
				0.0			(2.5'- 4') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; moist, brown, FILL.
				0.0			
				0.0			
	2	4.0	36	0.0			(4'- 6.7') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; moist, brown, FILL.
				0.0			
5				0.0			
				0.0			
				0.0			
				0.0			(6.7'- 8') WIDELY GRADED SAND WITH SILT (SW-SM); ~90% sand, fine to coarse, ~10% fines; moist, brown, lense of n.p. silt at ~7.7'.
				0.0			
				0.0			
							Bottom of borehole at 8.0 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE)

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG MAPLE AVE SEWER INVESTIGATION.GPJ GEI CONSULTANTS.GDT 11/19/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Metropolitan District
PROJECT: MDC Water Main Replacement
CITY/STATE: Hartford, CT
GEI PROJECT NUMBER: 123290-*-1001

BORING LOG

PAGE 1 of 1

B-2

GROUND SURFACE ELEVATION (FT): 56
LOCATION: Maple Avenue
NORTHING: 870964.3357 **EASTING:** 1026958.719
TOTAL DEPTH (FT): 8.00
DRILLED BY: Geologic Earth Exploration, Inc
DATUM VERT. / HORZ.: NAVD 88 / NAD83 CT
LOGGED BY: C. Benetti
DATE START / END: 10/2/2012
DRILLING DETAILS: Geoprobe / Track-mounted Geoprobe
WATER LEVEL DEPTHS (FT): 4/16/2012

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0	1	4.0	44	0.0			(0'- 1') ASPHALT.
				0.0			
				0.0			(1'- 1.8') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% gravel, fine to coarse, ~20% fines; moist, brown, FILL.
				26.6			
				0.0			(1.8'- 4') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; moist, brown, FILL, lenses of fine to medium sand throughout sample.
				0.0			
				0.0			
				0.0			
	2	4.0	46	34.6		B-2 (4-6)'	(4'- 8') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine to medium, ~10% fines; moist, brown.
				8.1			
5				5.0			
				4.1			
				4.7			
				3.7			
				3.1			

Bottom of borehole at 8.0 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE)

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG MAPLE AVE SEWER INVESTIGATION.GPJ GEI CONSULTANTS.GDT 11/19/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Metropolitan District
PROJECT: MDC Water Main Replacement
CITY/STATE: Hartford, CT
GEI PROJECT NUMBER: 123290-*-1001

BORING LOG
PAGE 1 of 1
B-3

GROUND SURFACE ELEVATION (FT): 54
LOCATION: Maple Avenue
NORTHING: 871012.4248 **EASTING:** 1027377.433
TOTAL DEPTH (FT): 8.00
DRILLED BY: Geologic Earth Exploration, Inc
DATUM VERT. / HORZ.: NAVD 88 / NAD83 CT
LOGGED BY: C. Benetti
DATE START / END: 10/2/2012
DRILLING DETAILS: Geoprobe / Track-mounted Geoprobe
WATER LEVEL DEPTHS (FT): 4/16/2012

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0	1	4.0	36	0.0			(0'- 0.5') ASPHALT.
				0.0			(0.5'- 1.6') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% gravel, fine to coarse, ~20% fines; moist, brown, FILL.
				0.0		B-3 (1-3)'	
				0.0			(1.6'- 2.2') SILT WITH SAND (ML); ~60% fines, ~40% sand, fine; moist, brown, FILL.
				0.0			(2.2'- 4') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines; moist, brown, FILL.
				0.0			
				0.0			
				0.0			
	2	4.0	30	0.0			(4'- 8') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines; moist, brown.
				0.0			
5				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
				0.0			

Bottom of borehole at 8.0 feet.

NOTES:

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FT. = FEET

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ENVIRONMENTAL BORING LOG MAPLE AVE SEWER INVESTIGATION.GPJ GEI CONSULTANTS.GDT 11/19/12

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CLIENT: Metropolitan District
PROJECT: MDC Water Main Replacement
CITY/STATE: Hartford, CT
GEI PROJECT NUMBER: 123290-*-1001

BORING LOG

PAGE 1 of 1

B-4

GROUND SURFACE ELEVATION (FT): 53
LOCATION: Maple Avenue
NORTHING: 871021.7381 **EASTING:** 1027627.719
TOTAL DEPTH (FT): 8.00
DRILLED BY: Geologic Earth Exploration, Inc
DATUM VERT. / HORZ.: NAVD 88 / NAD83 CT
LOGGED BY: C. Benetti
DATE START / END: 10/2/2012
DRILLING DETAILS: Geoprobe / Track-mounted Geoprobe
WATER LEVEL DEPTHS (FT): 4/16/2012

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0	1	4.0	48	0.0			(0'- 0.5') ASPHALT.
				0.0			(0.5'- 2') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% gravel, fine to coarse, ~20% fines; moist, brown, FILL.
				0.0			
				0.0			
				0.0			(2'- 4') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines; moist, brown.
				0.0			
				0.0			
				0.0			
	2	4.0	30	0.0		B-4 (4-8)'	(4'- 8') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines; moist, brown.
				0.0			
5				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
				0.0			

Bottom of borehole at 8.0 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE)

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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ENVIRONMENTAL BORING LOG MAPLE AVE SEWER INVESTIGATION.GPJ GEI CONSULTANTS.GDT 11/19/12

GEI Consultants, Inc.
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CLIENT: Metropolitan District
PROJECT: MDC Water Main Replacement
CITY/STATE: Hartford, CT
GEI PROJECT NUMBER: 123290-*-1001

BORING LOG

PAGE 1 of 1

B-5

GROUND SURFACE ELEVATION (FT): 52
LOCATION: Maple Avenue
NORTHING: 871024.6381 **EASTING:** 1027901.295
TOTAL DEPTH (FT): 8.00
DRILLED BY: Geologic Earth Exploration, Inc
DATUM VERT. / HORZ.: NAVD 88 / NAD83 CT
LOGGED BY: C. Benetti
DATE START / END: 10/2/2012
DRILLING DETAILS: Geoprobe / Track-mounted Geoprobe
WATER LEVEL DEPTHS (FT): 4/16/2012

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0	1	4.0	30	0.0			(0'- 0.7') ASPHALT.
				0.0			
				0.0			(0.7'- 4') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% gravel, fine to coarse, ~20% fines; moist, light brown, FILL, reddish brown color from ~3.2' to 4'.
				0.0			
				3.3		B-5 (2-4)'	
				0.0			
				0.0			
				0.0			
	2	4.0	40	0.0			(4'- 8') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% gravel, fine to coarse, ~20% fines; moist, light brown, FILL, reddish brown color from ~3.2' to 4'.
				0.0			
5				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
							Bottom of borehole at 8.0 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE)

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
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ENVIRONMENTAL BORING LOG MAPLE AVE SEWER INVESTIGATION.GPJ GEI CONSULTANTS.GDT 11/19/12

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CITY/STATE: Hartford, CT
GEI PROJECT NUMBER: 123290-*-1001

BORING LOG

PAGE 1 of 1

B-6

GROUND SURFACE ELEVATION (FT): 52
LOCATION: Maple Avenue
NORTHING: 870993.4194 **EASTING:** 1028198.842
TOTAL DEPTH (FT): 8.00
DRILLED BY: Geologic Earth Exploration, Inc
DATUM VERT. / HORZ.: NAVD 88 / NAD83 CT
LOGGED BY: C. Benetti
DATE START / END: 10/2/2012
DRILLING DETAILS: Geoprobe / Track-mounted Geoprobe
WATER LEVEL DEPTHS (FT): 4/16/2012

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0	1	4.0	30	0.0			(0'- 0.7') ASPHALT.
				0.0			
				0.0			(0.7'- 4') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, ~15% fines; moist, brown, FILL.
				0.0			
				0.0			
				0.0		B-6 (2-4)'	
				0.0			
				0.0			
				0.0			
	2	4.0	40	0.0			(4'- 4.6') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, ~15% fines; moist, brown, FILL.
				0.0			(4.6'- 8') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; moist, light brown, wet at ~7.5'.
5				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
							Bottom of borehole at 8.0 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE)

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
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TLO = TAR LIKE ODOR
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ENVIRONMENTAL BORING LOG MAPLE AVE SEWER INVESTIGATION.GPJ GEI CONSULTANTS.GDT 11/19/12

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CLIENT: Metropolitan District
PROJECT: MDC Water Main Replacement
CITY/STATE: Hartford, CT
GEI PROJECT NUMBER: 123290-*-1001

BORING LOG

PAGE 1 of 1

B-7

GROUND SURFACE ELEVATION (FT): 53
LOCATION: Maple Avenue
NORTHING: 870962.7103 **EASTING:** 1028488.472
TOTAL DEPTH (FT): 8.00
DRILLED BY: Geologic Earth Exploration, Inc
DATUM VERT. / HORZ.: NAVD 88 / NAD83 CT
LOGGED BY: C. Benetti
DATE START / END: 10/2/2012
DRILLING DETAILS: Geoprobe / Track-mounted Geoprobe
WATER LEVEL DEPTHS (FT): 4/16/2012

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0	1	4.0	40	0.0			(0'- 0.7') ASPHALT.
				0.0			
				0.0			(0.7'- 2') SILTY SAND WITH GRAVEL (SM); ~55% sand, fine to coarse, ~30% gravel, fine to coarse, ~15% fines; moist, brown, FILL.
				0.0			
				0.0			(2'- 4') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines; moist, brown, FILL.
				0.0			
				0.0			
				0.0			
	2	4.0	36	0.0			(4'- 7.3') SILTY SAND (SM); ~85% sand, fine to coarse, ~15% fines; moist, brown, FILL.
				0.0			
5				0.0			
				0.0		B-7 (5.5-7.5)'	
				0.0			
				0.0			
				0.0			
				0.0			(7.3'- 8') SILT (ML); ~90% fines, ~10% sand, fine; moist, brown, wet at ~7'.
							Bottom of borehole at 8.0 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE)

ppm = PARTS PER MILLION
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ENVIRONMENTAL BORING LOG MAPLE AVE SEWER INVESTIGATION.GPJ GEI CONSULTANTS.GDT 11/19/12

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CITY/STATE: Hartford, CT
GEI PROJECT NUMBER: 123290-*-1001

BORING LOG

PAGE 1 of 1

B-8

GROUND SURFACE ELEVATION (FT): 52
LOCATION: Maple Avenue
NORTHING: 870945.1866 **EASTING:** 1028723.361
TOTAL DEPTH (FT): 8.00
DRILLED BY: Geologic Earth Exploration, Inc
DATUM VERT. / HORZ.: NAVD 88 / NAD83 CT
LOGGED BY: C. Benetti
DATE START / END: 10/2/2012
DRILLING DETAILS: Geoprobe / Track-mounted Geoprobe
WATER LEVEL DEPTHS (FT): 4/16/2012

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0	1	4.0	36	0.0			(0'- 0.5') ASPHALT.
				0.0			(0.5'- 2') SILTY SAND WITH GRAVEL; ~50% sand, fine to coarse, ~30% gravel, fine to coarse, ~20% fines; moist, brown, FILL.
				0.0			
				0.0			
				0.0		B-8 (2-4)'	(2'- 2.6') SILTY SAND; ~50% sand, fine to medium, ~40% fines, ~10% gravel, fine; moist, dark brown, FILL.
				0.0			(2.6'- 4') WIDELY GRADED SAND WITH SILT; ~90% sand, fine to coarse, ~10% fines; moist, brown, FILL.
				0.0			
				0.0			
	2	4.0	24	0.0			(4'- 8') WIDELY GRADED SAND WITH SILT; ~90% sand, fine to coarse, ~10% fines; moist, brown, FILL.
				0.0			
5				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
				0.0			

Bottom of borehole at 8.0 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
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ENVIRONMENTAL BORING LOG MAPLE AVE SEWER INVESTIGATION.GPJ GEI CONSULTANTS.GDT 11/19/12

Appendix C

Laboratory Analytical Report and Results

Appendix C - Summary of Laboratory Results
The Metropolitan District
Maple Avenue Sewer Project
Windsor, Connecticut

		Sample Name	EPA Method	CAS Number	B-1 1-3 FT	B-2 4-6 FT	B-3 1-3 FT	B-4 4-8 FT	B-5 2-4 FT	B-6 2-4 FT	B-7 5.5-7.5 FT	B-8 2-4 FT
		Sample Interval			1-3'	4-6'	1-3'	4-8'	2-4'	2-4'	5.5-7.5'	2-4'
		Sample Date			10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012
BTEX (µg/kg)												
	R-DEC (µg/kg)	GA-PMC (µg/kg)										
Ethylbenzene	500000	10100	8260 B	100-41-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
m&p-Xylene			8260 B	106-42-3	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Toluene	500000	20000	8260 B	108-88-3	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Total Xylenes	500000	19500	8260 B	1330-20-7	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Benzene	21000	20	8260 B	71-43-2	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
o-Xylene			8260 B	95-47-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Other VOC's (µg/kg)												
	R-DEC (µg/kg)	GA-PMC (µg/kg)										
1,1,1,2-Tetrachloroethane	24000	20	SW 8260	630-20-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,1,1-Trichloroethane	500000	4000	SW 8260	71-55-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,1,2,2-Tetrachloroethane	3100	10	SW 8260	79-34-5	3.9 U	160 U	3.2 U	3.2 U	2.5 U	2.5 U	2.2 U	2.2 U
1,1,2-Trichloroethane	11000	100	SW 8260	79-00-5	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,1-Dichloroethane	500000	1400	SW 8260	75-34-3	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,1-Dichloroethene	1000	140	SW 8260	75-35-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,1-Dichloropropene			SW 8260	563-58-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,2,3-Trichlorobenzene			SW 8260	87-61-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,2,3-Trichloropropane			SW 8260	96-18-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,2,4-Trichlorobenzene			SW 8260	120-82-1	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene			SW 8260	95-63-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,2-Dibromo-3-chloropropane			SW 8260	96-12-8	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,2-Dibromoethane	7	10	SW 8260	106-93-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,2-Dichlorobenzene	500000	3100	SW 8260	95-50-1	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,2-Dichloroethane	6700	20	SW 8260	107-06-2	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,2-Dichloropropane	9000	100	SW 8260	78-87-5	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,3,5-Trimethylbenzene			SW 8260	108-67-8	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,3-Dichlorobenzene	500000	12000	SW 8260	541-73-1	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,3-Dichloropropane			SW 8260	142-28-9	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
1,4-Dichlorobenzene	26000	1500	SW 8260	106-46-7	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
2,2-Dichloropropane			SW 8260	594-20-7	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
2-Chlorotoluene			SW 8260	95-49-8	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
2-Hexanone			SW 8260	591-78-6	32 U	1400 U	26 U	27 U	21 U	21 U	18 U	18 U
2-Isopropyltoluene			SW 8260	527-84-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
4-Chlorotoluene			SW 8260	106-43-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
4-Methyl-2-pentanone	500000	7000	SW 8260	108-10-1	32 U	1400 U	26 U	27 U	21 U	21 U	18 U	18 U
Acetone	500000	14000	SW 8260	67-64-1	130 U	5500 U	110 U	110 U	82 U	85 U	74 U	73 U
Acrylonitrile	1100	10	SW 8260	107-13-1	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Bromobenzene			SW 8260	108-86-1	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Bromochloromethane			SW 8260	74-97-5	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Bromodichloromethane			SW 8260	75-27-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Bromoform	78000	80	SW 8260	75-25-2	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Bromomethane			SW 8260	74-83-9	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Carbon Disulfide			SW 8260	75-15-0	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Carbon tetrachloride	4700	100	SW 8260	56-23-5	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U

Appendix C - Summary of Laboratory Results
The Metropolitan District
Maple Avenue Sewer Project
Windsor, Connecticut

		Sample Name	EPA Method	CAS Number	B-1 1-3 FT	B-2 4-6 FT	B-3 1-3 FT	B-4 4-8 FT	B-5 2-4 FT	B-6 2-4 FT	B-7 5.5-7.5 FT	B-8 2-4 FT
		Sample Interval			1-3'	4-6'	1-3'	4-8'	2-4'	2-4'	5.5-7.5'	2-4'
		Sample Date			10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012
Chlorobenzene	500000	2000	SW 8260	108-90-7	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Chloroethane			SW 8260	75-00-3	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Chloroform	100000	120	SW 8260	67-66-3	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Chloromethane			SW 8260	74-87-3	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
cis-1,2-Dichloroethene	500000	1400	SW 8260	156-59-2	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
cis-1,3-Dichloropropene			SW 8260	10061-01-5	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Dibromochloromethane	7300	10	SW 8260	124-48-1	3.9 U	160 U	3.2 U	3.2 U	2.5 U	2.5 U	2.2 U	2.2 U
Dibromomethane			SW 8260	74-95-3	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Dichlorodifluoromethane			SW 8260	75-71-8	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Hexachlorobutadiene			SW 8260	87-68-3	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Isopropylbenzene			SW 8260	98-82-8	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Methyl Ethyl Ketone	500000	8000	SW 8260	78-93-3	39 U	1600 U	32 U	32 U	25 U	25 U	22 U	22 U
Methyl t-butyl ether (MTBE)	500000	2000	SW 8260	1634-04-4	13 U	550 U	11 U	11 U	8.2 U	8.5 U	7.4 U	7.3 U
Methylene chloride	82000	100	SW 8260	75-09-2	6.5 U	900 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Naphthalene	1000000	5600	SW 8260	91-20-3	6.5 U	3100	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
n-Butylbenzene			SW 8260	104-51-8	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
n-Propylbenzene			SW 8260	103-65-1	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
p-Isopropyltoluene			SW 8260	99-87-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
sec-Butylbenzene			SW 8260	135-98-8	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Styrene	500000	2000	SW 8260	100-42-5	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
tert-Butylbenzene			SW 8260	98-06-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Tetrachloroethene	12000	100	SW 8260	127-18-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Tetrahydrofuran (THF)			SW 8260	109-99-9	13 U	550 U	11 U	11 U	8.2 U	8.5 U	7.4 U	7.3 U
trans-1,2-Dichloroethene	500000	2000	SW 8260	156-60-5	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
trans-1,3-Dichloropropene			SW 8260	10061-02-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
trans-1,4-dichloro-2-butene			SW 8260	110-57-6	13 U	550 U	11 U	11 U	8.2 U	8.5 U	7.4 U	7.3 U
Trichloroethene	56000	100	SW 8260	79-01-6	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Trichlorofluoromethane			SW 8260	75-69-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Trichlorotrifluoroethane			SW 8260	76-13-1	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
Vinyl chloride	320	40	SW 8260	75-01-4	6.5 U	270 U	5.3 U	5.4 U	4.1 U	4.2 U	3.7 U	3.7 U
SVOC's (µg/kg)												
	R-DEC (µg/kg)	GA-PMC (µg/kg)										
1,2,4,5-Tetrachlorobenzene			SW 8270	95-94-3	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
1,2,4-Trichlorobenzene			SW 8270	120-82-1	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
1,2-Dichlorobenzene			SW 8270	95-50-1	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
1,2-Diphenylhydrazine			SW 8270	122-66-7	710 U	360 U	370 U	340 U	340 U	350 U	340 U	350 U
1,3-Dichlorobenzene			SW 8270	541-73-1	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
1,4-Dichlorobenzene			SW 8270	106-46-7	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
2,4,5-Trichlorophenol			SW 8270	95-95-4	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
2,4,6-Trichlorophenol			SW 8270	88-06-2	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
2,4-Dichlorophenol	200000	1000	SW 8270	120-83-2	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
2,4-Dimethylphenol			SW 8270	105-67-9	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
2,4-Dinitrophenol			SW 8270	51-28-5	1100 U	570 U	590 U	550 U	550 U	570 U	550 U	560 U
2,4-Dinitrotoluene			SW 8270	121-14-2	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
2,6-Dinitrotoluene			SW 8270	606-20-2	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U

Appendix C - Summary of Laboratory Results
The Metropolitan District
Maple Avenue Sewer Project
Windsor, Connecticut

			Sample Name	EPA Method	CAS Number	B-1 1-3 FT	B-2 4-6 FT	B-3 1-3 FT	B-4 4-8 FT	B-5 2-4 FT	B-6 2-4 FT	B-7 5.5-7.5 FT	B-8 2-4 FT
			Sample Interval			1-3'	4-6'	1-3'	4-8'	2-4'	2-4'	5.5-7.5'	2-4'
			Sample Date			10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012
2-Chloronaphthalene			SW 8270	91-58-7		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
2-Chlorophenol	340000	1000	SW 8270	95-57-8		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
2-Methylnaphthalene			SW 8270	91-57-6		500 U	260	260 U	240 U	240 U	250 U	240 U	250 U
2-Methylphenol (o-cresol)			SW 8270	95-48-7		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
2-Nitroaniline			SW 8270	88-74-4		1100 U	570 U	590 U	550 U	550 U	570 U	550 U	560 U
2-Nitrophenol			SW 8270	88-75-5		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
3&4-Methylphenol (m&p-cresol)			SW 8270	--		710 U	360 U	370 U	340 U	340 U	350 U	340 U	350 U
3,3'-Dichlorobenzidine			SW 8270	91-94-1		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
3-Nitroaniline			SW 8270	99-09-2		1100 U	570 U	590 U	550 U	550 U	570 U	550 U	560 U
4,6-Dinitro-2-methylphenol			SW 8270	534-52-1		2100 U	1000 U	1100 U	990 U	990 U	1000 U	1000 U	1000 U
4-Bromophenyl phenyl ether			SW 8270	101-55-3		710 U	360 U	370 U	340 U	340 U	350 U	340 U	350 U
4-Chloro-3-methylphenol			SW 8270	59-50-7		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
4-Chloroaniline			SW 8270	106-47-8		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
4-Chlorophenyl phenyl ether			SW 8270	7005-72-3		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
4-Nitroaniline			SW 8270	100-01-6		1100 U	570 U	590 U	550 U	550 U	570 U	550 U	560 U
4-Nitrophenol			SW 8270	100-02-7		2100 U	1000 U	1100 U	990 U	990 U	1000 U	1000 U	1000 U
Acenaphthene			SW 8270	83-32-9		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Acenaphthylene	1000000	8400	SW 8270	208-96-8		530	300	260 U	240 U	240 U	250 U	240 U	250 U
Acetophenone			SW 8270	98-86-2		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Aniline			SW 8270	62-53-3		2100 U	1000 U	1100 U	990 U	990 U	1000 U	1000 U	1000 U
Anthracene	1000000	40000	SW 8270	120-12-7		630	360	260 U	240 U	240 U	250 U	240 U	250 U
Benz(a)anthracene	1000	1000	SW 8270	56-55-3		**1500**	790	260 U	240 U	240 U	290	240 U	250 U
Benzidine			SW 8270	92-87-5		860 U	430 U	440 U	410 U	410 U	420 U	410 U	420 U
Benzo(a)pyrene	1000	1000	SW 8270	50-32-8		**1400**	820	260 U	240 U	240 U	270	240 U	250 U
Benzo(b)fluoranthene	1000	1000	SW 8270	205-99-2		**1600**	990	260 U	240 U	240 U	380	240 U	250 U
Benzo(ghi)perylene			SW 8270	191-24-2		500 U	330	260 U	240 U	240 U	250 U	240 U	250 U
Benzo(k)fluoranthene	8400	1000	SW 8270	207-08-9		500 U	390	260 U	240 U	240 U	250 U	240 U	250 U
Benzoic acid			SW 8270	65-85-0		2100 U	1000 U	1100 U	990 U	990 U	1000 U	1000 U	1000 U
Benzyl butyl phthalate	1000000	20000	SW 8270	85-68-7		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Bis(2-chloroethoxy)methane			SW 8270	111-91-1		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Bis(2-chloroethyl)ether	1000	1000	SW 8270	111-44-4		710 U	360 U	370 U	340 U	340 U	350 U	340 U	350 U
Bis(2-chloroisopropyl)ether	8800	1000	SW 8270	39638-32-9		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Bis(2-ethylhexyl)phthalate	44000	1000	SW 8270	117-81-7		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Carbazole			SW 8270	86-74-8		1100 U	540 U	550 U	510 U	510 U	530 U	520 U	530 U
Chrysene			SW 8270	218-01-9		1700	860	260 U	240 U	240 U	280	240 U	250 U
Dibenz(a,h)anthracene			SW 8270	53-70-3		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Dibenzofuran			SW 8270	132-64-9		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Diethyl phthalate			SW 8270	84-66-2		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Dimethylphthalate			SW 8270	131-11-3		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Di-n-butylphthalate	1000000	14000	SW 8270	84-74-2		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Di-n-octylphthalate	1000000	2000	SW 8270	117-84-0		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Fluoranthene	1000000	5600	SW 8270	206-44-0		2300	1600	260 U	240 U	240 U	550	240 U	250 U
Fluorene	1000000	5600	SW 8270	86-73-7		500 U	310	260 U	240 U	240 U	250 U	240 U	250 U
Hexachlorobenzene	1000	1000	SW 8270	118-74-1		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Hexachlorobutadiene			SW 8270	87-68-3		500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U

Appendix C - Summary of Laboratory Results
The Metropolitan District
Maple Avenue Sewer Project
Windsor, Connecticut

		Sample Name	EPA Method	CAS Number	B-1 1-3 FT	B-2 4-6 FT	B-3 1-3 FT	B-4 4-8 FT	B-5 2-4 FT	B-6 2-4 FT	B-7 5.5-7.5 FT	B-8 2-4 FT
		Sample Interval			1-3'	4-6'	1-3'	4-8'	2-4'	2-4'	5.5-7.5'	2-4'
		Sample Date			10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012
Hexachlorocyclopentadiene			SW 8270	77-47-4	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Hexachloroethane	44000	1000	SW 8270	67-72-1	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Indeno(1,2,3-cd)pyrene			SW 8270	193-39-5	500 U	290	260 U	240 U	240 U	250 U	240 U	250 U
Isophorone			SW 8270	78-59-1	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Naphthalene	1000000	5600	SW 8270	91-20-3	500 U	380	260 U	240 U	240 U	250 U	240 U	250 U
Nitrobenzene			SW 8270	98-95-3	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
N-Nitrosodimethylamine			SW 8270	62-75-9	710 U	360 U	370 U	340 U	340 U	350 U	340 U	350 U
N-Nitrosodi-n-propylamine			SW 8270	621-64-7	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
N-Nitrosodiphenylamine			SW 8270	86-30-6	710 U	360 U	370 U	340 U	340 U	350 U	340 U	350 U
Pentachloronitrobenzene			SW 8270	82-68-8	710 U	360 U	370 U	340 U	340 U	350 U	340 U	350 U
Pentachlorophenol	5100	1000	SW 8270	87-86-5	710 U	360 U	370 U	340 U	340 U	350 U	340 U	350 U
Phenanthrene	1000000	4000	SW 8270	85-01-8	2800	1500	260 U	240 U	240 U	250 U	240 U	250 U
Phenol	1000000	80000	SW 8270	108-95-2	500 U	250 U	260 U	240 U	240 U	250 U	240 U	250 U
Pyrene	1000000	4000	SW 8270	129-00-0	3400	1600	260 U	240 U	240 U	520	240 U	250 U
Pyridine			SW 8270	110-86-1	710 U	360 U	370 U	340 U	340 U	350 U	340 U	350 U
PCB (µg/kg)												
	R-DEC (µg/kg)											
PCB-1260	1000		SW 8082	11096-82-5	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
PCB-1254	1000		SW 8082	11097-69-1	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
PCB-1268	1000		SW 8082	11100-14-4	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
PCB-1221	1000		SW 8082	11104-28-2	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
PCB-1232	1000		SW 8082	11141-16-5	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
PCB-1248	1000		SW 8082	12672-29-6	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
PCB-1016	1000		SW 8082	12674-11-2	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
PCB-1262	1000		SW 8082	37324-23-5	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
PCB-1242	1000		SW 8082	53469-21-9	360 U	360 U	360 U	340 U	340 U	350 U	350 U	350 U
Total Metals (mg/kg)												
	R-DEC (mg/kg)											
Lead	500		SW 6010	7439-92-1	5.23	3.39	6.12	2.22	3.93	17.4	5.73	3.86
Nickel	1400		SW 6010	7440-02-0	16.6	9.56	9.83	9.45	7.07	9.85	6.78	5.99
Silver	340		SW 6010	7440-22-4	0.35 U	0.34 U	0.35 U	0.34 U	0.35 U	0.35 U	0.35 U	0.34 U
Arsenic	10		SW 6010	7440-38-2	3	1.8	1.6	1	1.2	1.1	0.7 U	1.3
Barium	4700		SW 6010	7440-39-3	54.6	29.6	40.6	20.3	24.5	33.5	13.4	32.7
Cadmium	34		SW 6010	7440-43-9	0.35 U	0.34 U	0.35 U	0.34 U	0.35 U	0.35 U	0.35 U	0.34 U
Chromium			SW 6010	7440-47-3	16.3	12.2	12.1	9.48	10.5	10.6	5.47	8
Copper	2500		SW 6010	7440-50-8	23.8	12.1	13.5	5.8	4.03	10.7	5.83	6.89
Zinc	20000		SW 6010	7440-66-6	59.8	22	34.7	13.6	18.6	23.3	14.4	19.4
Selenium	340		SW 6010	7782-49-2	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Mercury	20		SW 7471	7439-97-6	0.09 U	0.07 U	0.07 U	0.08 U	0.08 U	0.09 U	0.08 U	0.09 U
ETPH (mg/Kg)												
	R-DEC (mg/kg)	GA-PMC (mg/kg)										
Ext. Petroleum HC (mg/Kg)	500	500	CT ETPH/8015	--	11 U	33	11 U	10 U	10 U	11 U	10 U	10 U

Appendix C - Summary of Laboratory Results
The Metropolitan District
Maple Avenue Sewer Project
Windsor, Connecticut

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		Sample Interval			1-3'	4-6'	1-3'	4-8'	2-4'	2-4'	5.5-7.5'	2-4'
		Sample Date			10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012	10/2/2012
Waste Characterization Parameters												
	R-DEC (mg/kg)	GA-PMC (mg/L)										
Corrosivity (Positive/Negative)			SW 846/9045	--	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Reactivity Cyanide (mg/Kg)			SW 846-7.3	--	5.4 U	5.4 U	5.3 U	5.2 U	5.1 U	5.3 U	5.2 U	5.3 U
Reactivity (Positive/Negative)			SW 846-7.3	--	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Reactivity Sulfide (mg/Kg)			SW 846-7.3	--	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
pH - Soil			4500-H B/9045	--	8.65	8.48	8.36	6.75	5.79	7.02	6.27	7.37
Conductivity - Soil Matrix (umhos/cm)			SM 2510B	--	420	280	310	360	130	160	370	360
Ignitability (degrees F)					Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed
Flash Point (degrees F)			SW 1010	--	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U
TCLP Lead (mg/L)		0.015	SW 6010	7439-92-1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

Notes:

Values in Bold text exceed CT Remidiation Standard Regulations

Data for this sampling events have not been validated. Qualifiers are Lab Qualifiers.

mg/kg - milligrams/kilogram or parts per million (ppm)
µg/kg - micrograms/kilogram or parts per billion (ppb)
mg/L - milligrams/liter
BTEX - benzene, toluene, ethylbenzene, and xylenes
ETPH - Extractable Total Petroleum Hydrocarbons
VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
SVOCs - semivolatile organic compounds
PCBs - polychlorinated biphenyls
TCLP- toxicity characteristics leaching procedure
U - indicates not detected at or above the reporting limit shown.

PHOENIX
Environmental Laboratories, Inc.

Friday, November 09, 2012

Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Project ID: MDC-MAPLE AVE., SEWER
Sample ID#s: BC78088 - BC78097

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

Enclosed are revised Analysis Report pages. Please replace and discard the original pages. If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	8:30
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78088

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-1 1-3 FT

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Silver	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Arsenic	3.0	0.7	mg/Kg	10/04/12	LK	SW6010
Barium	54.6	0.35	mg/Kg	10/04/12	LK	SW6010
Cadmium	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Chromium	16.3	0.35	mg/Kg	10/04/12	LK	SW6010
Copper	23.8	0.35	mg/kg	10/04/12	LK	SW6010
Mercury	< 0.09	0.09	mg/Kg	10/04/12	RS	SW-7471
Nickel	16.6	0.35	mg/Kg	10/04/12	LK	SW6010
Lead	5.23	0.35	mg/Kg	10/04/12	LK	SW6010
Selenium	< 1.4	1.4	mg/Kg	10/04/12	LK	SW6010
TCLP Lead	< 0.10	0.10	mg/L	10/05/12	LK	SW6010
TCLP Metals Digestion	Completed			10/04/12	X/X	SW3005
Zinc	59.8	0.35	mg/Kg	10/04/12	LK	SW6010
Percent Solid	91		%	10/04/12	JL	E160.3
Conductivity - Soil Matrix	420	5	umhos/cm	10/03/12	RWR	SM2510B
Corrosivity	Negative	NONE	S.U.	10/03/12	O/EG	SW846/9045
Flash Point	>200	200	degree F	10/04/12	Y	SW1010
Ignitability	Passed	140	deg F	10/04/12	Y	SW1010
pH - Soil	8.65	0.10	pH Units	10/03/12 23:45	O/EG	4500-H B/9045
Reactivity Cyanide	< 5.4	5.4	mg/Kg	10/04/12	JL/GD	SW 846-7.3
Reactivity Sulfide	< 20	20	mg/Kg	10/04/12	JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	10/04/12	JL/GD	SW 846-7.3
Soil Extraction for PCB	Completed			10/03/12	BB/V	SW3545
Soil Extraction for SVOA	Completed			10/03/12	JJ/V	SW3545
Extraction of CT ETPH	Completed			10/03/12	BJ/V	3545
Mercury Digestion	Completed			10/04/12	X/X	SW7471
TCLP Extraction for Metals	Completed			10/03/12	X	EPA 1311
Total Metals Digest	Completed			10/03/12	AG	SW846 - 3050

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-1 1-3 FT

Phoenix I.D.: BC78088

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Field Extraction	Completed			10/02/12	CB	SW5035
TPH by GC (Extractable Products)						
Ext. Petroleum HC	ND	11	mg/Kg	10/04/12	JRB	CT ETPH/8015
Identification	ND		mg/Kg	10/04/12	JRB	CT ETPH/8015
QA/QC Surrogates						
% n-Pentacosane	79		%	10/04/12	JRB	50 - 150 %
Polychlorinated Biphenyls						
PCB-1016	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1221	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1232	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1242	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1248	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1254	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1260	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1262	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1268	ND	360	ug/Kg	10/04/12	AW	SW 8082
QA/QC Surrogates						
% DCBP	77		%	10/04/12	AW	30 - 150 %
% TCMX	90		%	10/04/12	AW	30 - 150 %
Volatiles						
1,1,1,2-Tetrachloroethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,1,1-Trichloroethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,1,2,2-Tetrachloroethane	ND	3.9	ug/Kg	10/07/12	H/J	SW8260
1,1,2-Trichloroethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloroethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloroethene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloropropene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,2,3-Trichlorobenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,2,3-Trichloropropane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,2,4-Trichlorobenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,2,4-Trimethylbenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,2-Dibromo-3-chloropropane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,2-Dibromoethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichlorobenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichloroethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichloropropane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,3,5-Trimethylbenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,3-Dichlorobenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,3-Dichloropropane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
1,4-Dichlorobenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
2,2-Dichloropropane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
2-Chlorotoluene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
2-Hexanone	ND	32	ug/Kg	10/07/12	H/J	SW8260
2-Isopropyltoluene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
4-Chlorotoluene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
4-Methyl-2-pentanone	ND	32	ug/Kg	10/07/12	H/J	SW8260
Acetone	ND	130	ug/Kg	10/07/12	H/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-1 1-3 FT

Phoenix I.D.: BC78088

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Acrylonitrile	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Benzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Bromobenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Bromochloromethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Bromodichloromethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Bromoform	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Bromomethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Carbon Disulfide	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Carbon tetrachloride	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Chlorobenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Chloroethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Chloroform	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Chloromethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
cis-1,2-Dichloroethene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
cis-1,3-Dichloropropene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Dibromochloromethane	ND	3.9	ug/Kg	10/07/12	H/J	SW8260
Dibromomethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Dichlorodifluoromethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Ethylbenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Hexachlorobutadiene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Isopropylbenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
m&p-Xylene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Methyl Ethyl Ketone	ND	39	ug/Kg	10/07/12	H/J	SW8260
Methyl t-butyl ether (MTBE)	ND	13	ug/Kg	10/07/12	H/J	SW8260
Methylene chloride	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Naphthalene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
n-Butylbenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
n-Propylbenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
o-Xylene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
p-Isopropyltoluene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
sec-Butylbenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Styrene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
tert-Butylbenzene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Tetrachloroethene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Tetrahydrofuran (THF)	ND	13	ug/Kg	10/07/12	H/J	SW8260
Toluene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Total Xylenes	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
trans-1,2-Dichloroethene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
trans-1,3-Dichloropropene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
trans-1,4-dichloro-2-butene	ND	13	ug/Kg	10/07/12	H/J	SW8260
Trichloroethene	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Trichlorofluoromethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Trichlorotrifluoroethane	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
Vinyl chloride	ND	6.5	ug/Kg	10/07/12	H/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	103		%	10/07/12	H/J	70 - 130 %
% Bromofluorobenzene	97		%	10/07/12	H/J	70 - 130 %
% Dibromofluoromethane	97		%	10/07/12	H/J	70 - 130 %
% Toluene-d8	102		%	10/07/12	H/J	70 - 130 %

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Semivolatiles						
1,2,4,5-Tetrachlorobenzene	ND	500	ug/Kg	10/04/12	DD	SW 8270
1,2,4-Trichlorobenzene	ND	500	ug/Kg	10/04/12	DD	SW 8270
1,2-Dichlorobenzene	ND	500	ug/Kg	10/04/12	DD	SW 8270
1,2-Diphenylhydrazine	ND	710	ug/Kg	10/04/12	DD	SW 8270
1,3-Dichlorobenzene	ND	500	ug/Kg	10/04/12	DD	SW 8270
1,4-Dichlorobenzene	ND	500	ug/Kg	10/04/12	DD	SW 8270
2,4,5-Trichlorophenol	ND	500	ug/Kg	10/04/12	DD	SW 8270
2,4,6-Trichlorophenol	ND	500	ug/Kg	10/04/12	DD	SW 8270
2,4-Dichlorophenol	ND	500	ug/Kg	10/04/12	DD	SW 8270
2,4-Dimethylphenol	ND	500	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrophenol	ND	1100	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrotoluene	ND	500	ug/Kg	10/04/12	DD	SW 8270
2,6-Dinitrotoluene	ND	500	ug/Kg	10/04/12	DD	SW 8270
2-Chloronaphthalene	ND	500	ug/Kg	10/04/12	DD	SW 8270
2-Chlorophenol	ND	500	ug/Kg	10/04/12	DD	SW 8270
2-Methylnaphthalene	ND	500	ug/Kg	10/04/12	DD	SW 8270
2-Methylphenol (o-cresol)	ND	500	ug/Kg	10/04/12	DD	SW 8270
2-Nitroaniline	ND	1100	ug/Kg	10/04/12	DD	SW 8270
2-Nitrophenol	ND	500	ug/Kg	10/04/12	DD	SW 8270
3&4-Methylphenol (m&p-cresol)	ND	710	ug/Kg	10/04/12	DD	SW 8270
3,3'-Dichlorobenzidine	ND	500	ug/Kg	10/04/12	DD	SW 8270
3-Nitroaniline	ND	1100	ug/Kg	10/04/12	DD	SW 8270
4,6-Dinitro-2-methylphenol	ND	2100	ug/Kg	10/04/12	DD	SW 8270
4-Bromophenyl phenyl ether	ND	710	ug/Kg	10/04/12	DD	SW 8270
4-Chloro-3-methylphenol	ND	500	ug/Kg	10/04/12	DD	SW 8270
4-Chloroaniline	ND	500	ug/Kg	10/04/12	DD	SW 8270
4-Chlorophenyl phenyl ether	ND	500	ug/Kg	10/04/12	DD	SW 8270
4-Nitroaniline	ND	1100	ug/Kg	10/04/12	DD	SW 8270
4-Nitrophenol	ND	2100	ug/Kg	10/04/12	DD	SW 8270
Acenaphthene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Acenaphthylene	530	500	ug/Kg	10/04/12	DD	SW 8270
Acetophenone	ND	500	ug/Kg	10/04/12	DD	SW 8270
Aniline	ND	2100	ug/Kg	10/04/12	DD	SW 8270
Anthracene	630	500	ug/Kg	10/04/12	DD	SW 8270
Benz(a)anthracene	1500	500	ug/Kg	10/04/12	DD	SW 8270
Benzidine	ND	860	ug/Kg	10/04/12	DD	SW 8270
Benzo(a)pyrene	1400	500	ug/Kg	10/04/12	DD	SW 8270
Benzo(b)fluoranthene	1600	500	ug/Kg	10/04/12	DD	SW 8270
Benzo(ghi)perylene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Benzo(k)fluoranthene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Benzoic acid	ND	2100	ug/Kg	10/04/12	DD	SW 8270
Benzyl butyl phthalate	ND	500	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethoxy)methane	ND	500	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethyl)ether	ND	710	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroisopropyl)ether	ND	500	ug/Kg	10/04/12	DD	SW 8270
Bis(2-ethylhexyl)phthalate	ND	500	ug/Kg	10/04/12	DD	SW 8270
Carbazole	ND	1100	ug/Kg	10/04/12	DD	SW 8270
Chrysene	1700	500	ug/Kg	10/04/12	DD	SW 8270

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-1 1-3 FT

Phoenix I.D.: BC78088

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Dibenz(a,h)anthracene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Dibenzofuran	ND	500	ug/Kg	10/04/12	DD	SW 8270
Diethyl phthalate	ND	500	ug/Kg	10/04/12	DD	SW 8270
Dimethylphthalate	ND	500	ug/Kg	10/04/12	DD	SW 8270
Di-n-butylphthalate	ND	500	ug/Kg	10/04/12	DD	SW 8270
Di-n-octylphthalate	ND	500	ug/Kg	10/04/12	DD	SW 8270
Fluoranthene	2300	500	ug/Kg	10/04/12	DD	SW 8270
Fluorene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobenzene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobutadiene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Hexachlorocyclopentadiene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Hexachloroethane	ND	500	ug/Kg	10/04/12	DD	SW 8270
Indeno(1,2,3-cd)pyrene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Isophorone	ND	500	ug/Kg	10/04/12	DD	SW 8270
Naphthalene	ND	500	ug/Kg	10/04/12	DD	SW 8270
Nitrobenzene	ND	500	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodimethylamine	ND	710	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodi-n-propylamine	ND	500	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodiphenylamine	ND	710	ug/Kg	10/04/12	DD	SW 8270
Pentachloronitrobenzene	ND	710	ug/Kg	10/04/12	DD	SW 8270
Pentachlorophenol	ND	710	ug/Kg	10/04/12	DD	SW 8270
Phenanthrene	2800	500	ug/Kg	10/04/12	DD	SW 8270
Phenol	ND	500	ug/Kg	10/04/12	DD	SW 8270
Pyrene	3400	500	ug/Kg	10/04/12	DD	SW 8270
Pyridine	ND	710	ug/Kg	10/04/12	DD	SW 8270
QA/QC Surrogates						
% 2,4,6-Tribromophenol	78		%	10/04/12	DD	30 - 130 %
% 2-Fluorobiphenyl	74		%	10/04/12	DD	40 - 140 %
% 2-Fluorophenol	66		%	10/04/12	DD	30 - 130 %
% Nitrobenzene-d5	75		%	10/04/12	DD	40 - 140 %
% Phenol-d5	61		%	10/04/12	DD	30 - 130 %
% Terphenyl-d14	71		%	10/04/12	DD	40 - 140 %

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-1 1-3 FT

Phoenix I.D.: BC78088

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Corrosivity is based solely on the pH analysis performed above.
Ignitability is based solely on the results of the closed cup flashpoint analysis performed above.
The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

* Due to a matrix interference and/or the presence of a large amount of non-target material in the sample, an elevated RL was reported for the semivolatile analysis.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	9:00
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78089

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-2 4-6 FT

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Silver	< 0.34	0.34	mg/Kg	10/04/12	LK	SW6010
Arsenic	1.8	0.7	mg/Kg	10/04/12	LK	SW6010
Barium	29.6	0.34	mg/Kg	10/04/12	LK	SW6010
Cadmium	< 0.34	0.34	mg/Kg	10/04/12	LK	SW6010
Chromium	12.2	0.34	mg/Kg	10/04/12	LK	SW6010
Copper	12.1	0.34	mg/kg	10/04/12	LK	SW6010
Mercury	< 0.07	0.07	mg/Kg	10/04/12	RS	SW-7471
Nickel	9.56	0.34	mg/Kg	10/04/12	LK	SW6010
Lead	3.39	0.34	mg/Kg	10/04/12	LK	SW6010
Selenium	< 1.3	1.3	mg/Kg	10/04/12	LK	SW6010
TCLP Lead	< 0.10	0.10	mg/L	10/05/12	LK	SW6010
TCLP Metals Digestion	Completed			10/04/12	X/X	SW3005
Zinc	22.0	0.34	mg/Kg	10/04/12	LK	SW6010
Percent Solid	92		%	10/04/12	JL	E160.3
Conductivity - Soil Matrix	280	5	umhos/cm	10/03/12	RWR	SM2510B
Corrosivity	Negative	NONE	S.U.	10/03/12	O/EG	SW846/9045
Flash Point	>200	200	degree F	10/04/12	Y	SW1010
Ignitability	Passed	140	deg F	10/04/12	Y	SW1010
pH - Soil	8.48	0.10	pH Units	10/03/12 23:45	O/EG	4500-H B/9045
Reactivity Cyanide	< 5.4	5.4	mg/Kg	10/04/12	JL/GD	SW 846-7.3
Reactivity Sulfide	< 20	20	mg/Kg	10/04/12	JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	10/04/12	JL/GD	SW 846-7.3
Soil Extraction for PCB	Completed			10/03/12	BB/V	SW3545
Soil Extraction for SVOA	Completed			10/03/12	JJ/V	SW3545
Extraction of CT ETPH	Completed			10/03/12	BJ/V	3545
Mercury Digestion	Completed			10/04/12	X/X	SW7471
TCLP Extraction for Metals	Completed			10/03/12	X	EPA 1311
Total Metals Digest	Completed			10/03/12	AG	SW846 - 3050

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Field Extraction	Completed			10/02/12	CB	SW5035
TPH by GC (Extractable Products)						
Ext. Petroleum HC	33	21	mg/Kg	10/04/12	JRB	CT ETPH/8015
Identification	**		mg/Kg	10/04/12	JRB	CT ETPH/8015
QA/QC Surrogates						
% n-Pentacosane	60		%	10/04/12	JRB	50 - 150 %
Polychlorinated Biphenyls						
PCB-1016	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1221	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1232	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1242	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1248	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1254	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1260	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1262	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1268	ND	360	ug/Kg	10/04/12	AW	SW 8082
QA/QC Surrogates						
% DCBP	60		%	10/04/12	AW	30 - 150 %
% TCMX	68		%	10/04/12	AW	30 - 150 %
Volatiles						
1,1,1,2-Tetrachloroethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,1,1-Trichloroethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,1,2,2-Tetrachloroethane	ND	160	ug/Kg	10/10/12	R/J	SW8260
1,1,2-Trichloroethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,1-Dichloroethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,1-Dichloroethene	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,1-Dichloropropene	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,2,3-Trichlorobenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,2,3-Trichloropropane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,2,4-Trichlorobenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,2,4-Trimethylbenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,2-Dibromo-3-chloropropane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,2-Dibromoethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,2-Dichlorobenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,2-Dichloroethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,2-Dichloropropane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,3,5-Trimethylbenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,3-Dichlorobenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,3-Dichloropropane	ND	270	ug/Kg	10/10/12	R/J	SW8260
1,4-Dichlorobenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
2,2-Dichloropropane	ND	270	ug/Kg	10/10/12	R/J	SW8260
2-Chlorotoluene	ND	270	ug/Kg	10/10/12	R/J	SW8260
2-Hexanone	ND	1400	ug/Kg	10/10/12	R/J	SW8260
2-Isopropyltoluene	ND	270	ug/Kg	10/10/12	R/J	SW8260
4-Chlorotoluene	ND	270	ug/Kg	10/10/12	R/J	SW8260
4-Methyl-2-pentanone	ND	1400	ug/Kg	10/10/12	R/J	SW8260
Acetone	ND	5500	ug/Kg	10/10/12	R/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-2 4-6 FT

Phoenix I.D.: BC78089

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Acrylonitrile	ND	270	ug/Kg	10/10/12	R/J	SW8260
Benzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Bromobenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Bromochloromethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
Bromodichloromethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
Bromoform	ND	270	ug/Kg	10/10/12	R/J	SW8260
Bromomethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
Carbon Disulfide	ND	270	ug/Kg	10/10/12	R/J	SW8260
Carbon tetrachloride	ND	270	ug/Kg	10/10/12	R/J	SW8260
Chlorobenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Chloroethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
Chloroform	ND	270	ug/Kg	10/10/12	R/J	SW8260
Chloromethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
cis-1,2-Dichloroethene	ND	270	ug/Kg	10/10/12	R/J	SW8260
cis-1,3-Dichloropropene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Dibromochloromethane	ND	160	ug/Kg	10/10/12	R/J	SW8260
Dibromomethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
Dichlorodifluoromethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
Ethylbenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Hexachlorobutadiene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Isopropylbenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
m&p-Xylene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Methyl Ethyl Ketone	ND	1600	ug/Kg	10/10/12	R/J	SW8260
Methyl t-butyl ether (MTBE)	ND	550	ug/Kg	10/10/12	R/J	SW8260
Methylene chloride	ND	900	ug/Kg	10/10/12	R/J	SW8260
Naphthalene	3100	270	ug/Kg	10/10/12	R/J	SW8260
n-Butylbenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
n-Propylbenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
o-Xylene	ND	270	ug/Kg	10/10/12	R/J	SW8260
p-Isopropyltoluene	ND	270	ug/Kg	10/10/12	R/J	SW8260
sec-Butylbenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Styrene	ND	270	ug/Kg	10/10/12	R/J	SW8260
tert-Butylbenzene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Tetrachloroethene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Tetrahydrofuran (THF)	ND	550	ug/Kg	10/10/12	R/J	SW8260
Toluene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Total Xylenes	ND	270	ug/Kg	10/10/12	R/J	SW8260
trans-1,2-Dichloroethene	ND	270	ug/Kg	10/10/12	R/J	SW8260
trans-1,3-Dichloropropene	ND	270	ug/Kg	10/10/12	R/J	SW8260
trans-1,4-dichloro-2-butene	ND	550	ug/Kg	10/10/12	R/J	SW8260
Trichloroethene	ND	270	ug/Kg	10/10/12	R/J	SW8260
Trichlorofluoromethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
Trichlorotrifluoroethane	ND	270	ug/Kg	10/10/12	R/J	SW8260
Vinyl chloride	ND	270	ug/Kg	10/10/12	R/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	102		%	10/10/12	R/J	70 - 130 %
% Bromofluorobenzene	96		%	10/10/12	R/J	70 - 130 %
% Dibromofluoromethane	98		%	10/10/12	R/J	70 - 130 %
% Toluene-d8	100		%	10/10/12	R/J	70 - 130 %

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Semivolatiles						
1,2,4,5-Tetrachlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,2,4-Trichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,2-Dichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,2-Diphenylhydrazine	ND	360	ug/Kg	10/04/12	DD	SW 8270
1,3-Dichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,4-Dichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4,5-Trichlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4,6-Trichlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4-Dichlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4-Dimethylphenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrophenol	ND	570	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrotoluene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,6-Dinitrotoluene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Chloronaphthalene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Chlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Methylnaphthalene	260	250	ug/Kg	10/04/12	DD	SW 8270
2-Methylphenol (o-cresol)	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Nitroaniline	ND	570	ug/Kg	10/04/12	DD	SW 8270
2-Nitrophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
3&4-Methylphenol (m&p-cresol)	ND	360	ug/Kg	10/04/12	DD	SW 8270
3,3'-Dichlorobenzidine	ND	250	ug/Kg	10/04/12	DD	SW 8270
3-Nitroaniline	ND	570	ug/Kg	10/04/12	DD	SW 8270
4,6-Dinitro-2-methylphenol	ND	1000	ug/Kg	10/04/12	DD	SW 8270
4-Bromophenyl phenyl ether	ND	360	ug/Kg	10/04/12	DD	SW 8270
4-Chloro-3-methylphenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
4-Chloroaniline	ND	250	ug/Kg	10/04/12	DD	SW 8270
4-Chlorophenyl phenyl ether	ND	250	ug/Kg	10/04/12	DD	SW 8270
4-Nitroaniline	ND	570	ug/Kg	10/04/12	DD	SW 8270
4-Nitrophenol	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Acenaphthene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Acenaphthylene	300	250	ug/Kg	10/04/12	DD	SW 8270
Acetophenone	ND	250	ug/Kg	10/04/12	DD	SW 8270
Aniline	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Anthracene	360	250	ug/Kg	10/04/12	DD	SW 8270
Benz(a)anthracene	790	250	ug/Kg	10/04/12	DD	SW 8270
Benzidine	ND	430	ug/Kg	10/04/12	DD	SW 8270
Benzo(a)pyrene	820	250	ug/Kg	10/04/12	DD	SW 8270
Benzo(b)fluoranthene	990	250	ug/Kg	10/04/12	DD	SW 8270
Benzo(ghi)perylene	330	250	ug/Kg	10/04/12	DD	SW 8270
Benzo(k)fluoranthene	390	250	ug/Kg	10/04/12	DD	SW 8270
Benzoic acid	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Benzyl butyl phthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethoxy)methane	ND	250	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethyl)ether	ND	360	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroisopropyl)ether	ND	250	ug/Kg	10/04/12	DD	SW 8270
Bis(2-ethylhexyl)phthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Carbazole	ND	540	ug/Kg	10/04/12	DD	SW 8270
Chrysene	860	250	ug/Kg	10/04/12	DD	SW 8270

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-2 4-6 FT

Phoenix I.D.: BC78089

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Dibenz(a,h)anthracene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Dibenzofuran	ND	250	ug/Kg	10/04/12	DD	SW 8270
Diethyl phthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Dimethylphthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Di-n-butylphthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Di-n-octylphthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Fluoranthene	1600	250	ug/Kg	10/04/12	DD	SW 8270
Fluorene	310	250	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobutadiene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachlorocyclopentadiene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachloroethane	ND	250	ug/Kg	10/04/12	DD	SW 8270
Indeno(1,2,3-cd)pyrene	290	250	ug/Kg	10/04/12	DD	SW 8270
Isophorone	ND	250	ug/Kg	10/04/12	DD	SW 8270
Naphthalene	380	250	ug/Kg	10/04/12	DD	SW 8270
Nitrobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodimethylamine	ND	360	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodi-n-propylamine	ND	250	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodiphenylamine	ND	360	ug/Kg	10/04/12	DD	SW 8270
Pentachloronitrobenzene	ND	360	ug/Kg	10/04/12	DD	SW 8270
Pentachlorophenol	ND	360	ug/Kg	10/04/12	DD	SW 8270
Phenanthrene	1500	250	ug/Kg	10/04/12	DD	SW 8270
Phenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
Pyrene	1600	250	ug/Kg	10/04/12	DD	SW 8270
Pyridine	ND	360	ug/Kg	10/04/12	DD	SW 8270
QA/QC Surrogates						
% 2,4,6-Tribromophenol	82		%	10/04/12	DD	30 - 130 %
% 2-Fluorobiphenyl	75		%	10/04/12	DD	40 - 140 %
% 2-Fluorophenol	71		%	10/04/12	DD	30 - 130 %
% Nitrobenzene-d5	83		%	10/04/12	DD	40 - 140 %
% Phenol-d5	71		%	10/04/12	DD	30 - 130 %
% Terphenyl-d14	74		%	10/04/12	DD	40 - 140 %

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-2 4-6 FT

Phoenix I.D.: BC78089

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Corrosivity is based solely on the pH analysis performed above.
Ignitability is based solely on the results of the closed cup flashpoint analysis performed above.
The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

**Petroleum hydrocarbon chromatogram contains a multicomponent hydrocarbon distribution in the range of C9 to C36. The sample was quantitated against a C9-C36 alkane hydrocarbon standard.

Elevated reporting limits for volatiles due to dilution for sample matrix. Low-level samples were analyzed with poor internal standard response.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	9:30
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78090

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-3 1-3 FT

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Silver	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Arsenic	1.6	0.7	mg/Kg	10/04/12	LK	SW6010
Barium	40.6	0.35	mg/Kg	10/04/12	LK	SW6010
Cadmium	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Chromium	12.1	0.35	mg/Kg	10/04/12	LK	SW6010
Copper	13.5	0.35	mg/kg	10/04/12	LK	SW6010
Mercury	< 0.07	0.07	mg/Kg	10/04/12	RS	SW-7471
Nickel	9.83	0.35	mg/Kg	10/04/12	LK	SW6010
Lead	6.12	0.35	mg/Kg	10/04/12	LK	SW6010
Selenium	< 1.4	1.4	mg/Kg	10/04/12	LK	SW6010
TCLP Lead	< 0.10	0.10	mg/L	10/05/12	LK	SW6010
TCLP Metals Digestion	Completed			10/04/12	X/X	SW3005
Zinc	34.7	0.35	mg/Kg	10/04/12	LK	SW6010
Percent Solid	90		%	10/04/12	JL	E160.3
Conductivity - Soil Matrix	310	5	umhos/cm	10/03/12	RWR	SM2510B
Corrosivity	Negative	NONE	S.U.	10/03/12	O/EG	SW846/9045
Flash Point	>200	200	degree F	10/04/12	Y	SW1010
Ignitability	Passed	140	deg F	10/04/12	Y	SW1010
pH - Soil	8.36	0.10	pH Units	10/03/12 23:45	O/EG	4500-H B/9045
Reactivity Cyanide	< 5.3	5.3	mg/Kg	10/04/12	JL/GD	SW 846-7.3
Reactivity Sulfide	< 20	20	mg/Kg	10/04/12	JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	10/04/12	JL/GD	SW 846-7.3
Soil Extraction for PCB	Completed			10/03/12	BB/V	SW3545
Soil Extraction for SVOA	Completed			10/03/12	JJ/V	SW3545
Extraction of CT ETPH	Completed			10/03/12	BJ/V	3545
Mercury Digestion	Completed			10/04/12	X/X	SW7471
TCLP Extraction for Metals	Completed			10/03/12	X	EPA 1311
Total Metals Digest	Completed			10/03/12	AG	SW846 - 3050

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-3 1-3 FT

Phoenix I.D.: BC78090

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Field Extraction	Completed			10/02/12	CB	SW5035
TPH by GC (Extractable Products)						
Ext. Petroleum HC	ND	11	mg/Kg	10/08/12	JRB	CT ETPH/8015
Identification	ND		mg/Kg	10/08/12	JRB	CT ETPH/8015
QA/QC Surrogates						
% n-Pentacosane	64		%	10/08/12	JRB	50 - 150 %
Polychlorinated Biphenyls						
PCB-1016	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1221	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1232	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1242	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1248	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1254	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1260	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1262	ND	360	ug/Kg	10/04/12	AW	SW 8082
PCB-1268	ND	360	ug/Kg	10/04/12	AW	SW 8082
QA/QC Surrogates						
% DCBP	78		%	10/04/12	AW	30 - 150 %
% TCMX	88		%	10/04/12	AW	30 - 150 %
Volatiles						
1,1,1,2-Tetrachloroethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,1,1-Trichloroethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,1,2,2-Tetrachloroethane	ND	3.2	ug/Kg	10/07/12	H/J	SW8260
1,1,2-Trichloroethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloroethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloroethene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloropropene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,2,3-Trichlorobenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,2,3-Trichloropropane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,2,4-Trichlorobenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,2,4-Trimethylbenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,2-Dibromo-3-chloropropane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,2-Dibromoethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichlorobenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichloroethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichloropropane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,3,5-Trimethylbenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,3-Dichlorobenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,3-Dichloropropane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
1,4-Dichlorobenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
2,2-Dichloropropane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
2-Chlorotoluene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
2-Hexanone	ND	26	ug/Kg	10/07/12	H/J	SW8260
2-Isopropyltoluene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
4-Chlorotoluene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
4-Methyl-2-pentanone	ND	26	ug/Kg	10/07/12	H/J	SW8260
Acetone	ND	110	ug/Kg	10/07/12	H/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-3 1-3 FT

Phoenix I.D.: BC78090

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Acrylonitrile	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Benzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Bromobenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Bromochloromethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Bromodichloromethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Bromoform	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Bromomethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Carbon Disulfide	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Carbon tetrachloride	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Chlorobenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Chloroethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Chloroform	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Chloromethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
cis-1,2-Dichloroethene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
cis-1,3-Dichloropropene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Dibromochloromethane	ND	3.2	ug/Kg	10/07/12	H/J	SW8260
Dibromomethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Dichlorodifluoromethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Ethylbenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Hexachlorobutadiene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Isopropylbenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
m&p-Xylene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Methyl Ethyl Ketone	ND	32	ug/Kg	10/07/12	H/J	SW8260
Methyl t-butyl ether (MTBE)	ND	11	ug/Kg	10/07/12	H/J	SW8260
Methylene chloride	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Naphthalene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
n-Butylbenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
n-Propylbenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
o-Xylene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
p-Isopropyltoluene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
sec-Butylbenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Styrene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
tert-Butylbenzene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Tetrachloroethene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Tetrahydrofuran (THF)	ND	11	ug/Kg	10/07/12	H/J	SW8260
Toluene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Total Xylenes	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
trans-1,2-Dichloroethene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
trans-1,3-Dichloropropene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
trans-1,4-dichloro-2-butene	ND	11	ug/Kg	10/07/12	H/J	SW8260
Trichloroethene	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Trichlorofluoromethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Trichlorotrifluoroethane	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
Vinyl chloride	ND	5.3	ug/Kg	10/07/12	H/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	99		%	10/07/12	H/J	70 - 130 %
% Bromofluorobenzene	99		%	10/07/12	H/J	70 - 130 %
% Dibromofluoromethane	94		%	10/07/12	H/J	70 - 130 %
% Toluene-d8	102		%	10/07/12	H/J	70 - 130 %

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Semivolatiles						
1,2,4,5-Tetrachlorobenzene	ND	260	ug/Kg	10/04/12	DD	SW 8270
1,2,4-Trichlorobenzene	ND	260	ug/Kg	10/04/12	DD	SW 8270
1,2-Dichlorobenzene	ND	260	ug/Kg	10/04/12	DD	SW 8270
1,2-Diphenylhydrazine	ND	370	ug/Kg	10/04/12	DD	SW 8270
1,3-Dichlorobenzene	ND	260	ug/Kg	10/04/12	DD	SW 8270
1,4-Dichlorobenzene	ND	260	ug/Kg	10/04/12	DD	SW 8270
2,4,5-Trichlorophenol	ND	260	ug/Kg	10/04/12	DD	SW 8270
2,4,6-Trichlorophenol	ND	260	ug/Kg	10/04/12	DD	SW 8270
2,4-Dichlorophenol	ND	260	ug/Kg	10/04/12	DD	SW 8270
2,4-Dimethylphenol	ND	260	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrophenol	ND	590	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrotoluene	ND	260	ug/Kg	10/04/12	DD	SW 8270
2,6-Dinitrotoluene	ND	260	ug/Kg	10/04/12	DD	SW 8270
2-Chloronaphthalene	ND	260	ug/Kg	10/04/12	DD	SW 8270
2-Chlorophenol	ND	260	ug/Kg	10/04/12	DD	SW 8270
2-Methylnaphthalene	ND	260	ug/Kg	10/04/12	DD	SW 8270
2-Methylphenol (o-cresol)	ND	260	ug/Kg	10/04/12	DD	SW 8270
2-Nitroaniline	ND	590	ug/Kg	10/04/12	DD	SW 8270
2-Nitrophenol	ND	260	ug/Kg	10/04/12	DD	SW 8270
3&4-Methylphenol (m&p-cresol)	ND	370	ug/Kg	10/04/12	DD	SW 8270
3,3'-Dichlorobenzidine	ND	260	ug/Kg	10/04/12	DD	SW 8270
3-Nitroaniline	ND	590	ug/Kg	10/04/12	DD	SW 8270
4,6-Dinitro-2-methylphenol	ND	1100	ug/Kg	10/04/12	DD	SW 8270
4-Bromophenyl phenyl ether	ND	370	ug/Kg	10/04/12	DD	SW 8270
4-Chloro-3-methylphenol	ND	260	ug/Kg	10/04/12	DD	SW 8270
4-Chloroaniline	ND	260	ug/Kg	10/04/12	DD	SW 8270
4-Chlorophenyl phenyl ether	ND	260	ug/Kg	10/04/12	DD	SW 8270
4-Nitroaniline	ND	590	ug/Kg	10/04/12	DD	SW 8270
4-Nitrophenol	ND	1100	ug/Kg	10/04/12	DD	SW 8270
Acenaphthene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Acenaphthylene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Acetophenone	ND	260	ug/Kg	10/04/12	DD	SW 8270
Aniline	ND	1100	ug/Kg	10/04/12	DD	SW 8270
Anthracene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Benz(a)anthracene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Benzidine	ND	440	ug/Kg	10/04/12	DD	SW 8270
Benzo(a)pyrene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Benzo(b)fluoranthene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Benzo(ghi)perylene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Benzo(k)fluoranthene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Benzoic acid	ND	1100	ug/Kg	10/04/12	DD	SW 8270
Benzyl butyl phthalate	ND	260	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethoxy)methane	ND	260	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethyl)ether	ND	370	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroisopropyl)ether	ND	260	ug/Kg	10/04/12	DD	SW 8270
Bis(2-ethylhexyl)phthalate	ND	260	ug/Kg	10/04/12	DD	SW 8270
Carbazole	ND	550	ug/Kg	10/04/12	DD	SW 8270
Chrysene	ND	260	ug/Kg	10/04/12	DD	SW 8270

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-3 1-3 FT

Phoenix I.D.: BC78090

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Dibenz(a,h)anthracene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Dibenzofuran	ND	260	ug/Kg	10/04/12	DD	SW 8270
Diethyl phthalate	ND	260	ug/Kg	10/04/12	DD	SW 8270
Dimethylphthalate	ND	260	ug/Kg	10/04/12	DD	SW 8270
Di-n-butylphthalate	ND	260	ug/Kg	10/04/12	DD	SW 8270
Di-n-octylphthalate	ND	260	ug/Kg	10/04/12	DD	SW 8270
Fluoranthene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Fluorene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobenzene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobutadiene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Hexachlorocyclopentadiene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Hexachloroethane	ND	260	ug/Kg	10/04/12	DD	SW 8270
Indeno(1,2,3-cd)pyrene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Isophorone	ND	260	ug/Kg	10/04/12	DD	SW 8270
Naphthalene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Nitrobenzene	ND	260	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodimethylamine	ND	370	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodi-n-propylamine	ND	260	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodiphenylamine	ND	370	ug/Kg	10/04/12	DD	SW 8270
Pentachloronitrobenzene	ND	370	ug/Kg	10/04/12	DD	SW 8270
Pentachlorophenol	ND	370	ug/Kg	10/04/12	DD	SW 8270
Phenanthrene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Phenol	ND	260	ug/Kg	10/04/12	DD	SW 8270
Pyrene	ND	260	ug/Kg	10/04/12	DD	SW 8270
Pyridine	ND	370	ug/Kg	10/04/12	DD	SW 8270
QA/QC Surrogates						
% 2,4,6-Tribromophenol	67		%	10/04/12	DD	30 - 130 %
% 2-Fluorobiphenyl	64		%	10/04/12	DD	40 - 140 %
% 2-Fluorophenol	63		%	10/04/12	DD	30 - 130 %
% Nitrobenzene-d5	63		%	10/04/12	DD	40 - 140 %
% Phenol-d5	63		%	10/04/12	DD	30 - 130 %
% Terphenyl-d14	82		%	10/04/12	DD	40 - 140 %

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Corrosivity is based solely on the pH analysis performed above.
Ignitability is based solely on the results of the closed cup flashpoint analysis performed above.
The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	10:00
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78091

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-4 4-8 FT

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Silver	< 0.34	0.34	mg/Kg	10/04/12	LK	SW6010
Arsenic	1.0	0.7	mg/Kg	10/04/12	LK	SW6010
Barium	20.3	0.34	mg/Kg	10/04/12	LK	SW6010
Cadmium	< 0.34	0.34	mg/Kg	10/04/12	LK	SW6010
Chromium	9.48	0.34	mg/Kg	10/04/12	LK	SW6010
Copper	5.80	0.34	mg/kg	10/04/12	LK	SW6010
Mercury	< 0.08	0.08	mg/Kg	10/04/12	RS	SW-7471
Nickel	9.45	0.34	mg/Kg	10/04/12	LK	SW6010
Lead	2.22	0.34	mg/Kg	10/04/12	LK	SW6010
Selenium	< 1.4	1.4	mg/Kg	10/04/12	LK	SW6010
TCLP Lead	< 0.10	0.10	mg/L	10/05/12	LK	SW6010
TCLP Metals Digestion	Completed			10/04/12	X/X	SW3005
Zinc	13.6	0.34	mg/Kg	10/04/12	LK	SW6010
Percent Solid	96		%	10/04/12	JL	E160.3
Conductivity - Soil Matrix	360	5	umhos/cm	10/03/12	RWR	SM2510B
Corrosivity	Negative	NONE	S.U.	10/03/12	O/EG	SW846/9045
Flash Point	>200	200	degree F	10/04/12	Y	SW1010
Ignitability	Passed	140	deg F	10/04/12	Y	SW1010
pH - Soil	6.75	0.10	pH Units	10/03/12 23:45	O/EG	4500-H B/9045
Reactivity Cyanide	< 5.2	5.2	mg/Kg	10/04/12	JL/GD	SW 846-7.3
Reactivity Sulfide	< 20	20	mg/Kg	10/04/12	JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	10/04/12	JL/GD	SW 846-7.3
Soil Extraction for PCB	Completed			10/03/12	BB/V	SW3545
Soil Extraction for SVOA	Completed			10/03/12	JJ/V	SW3545
Extraction of CT ETPH	Completed			10/03/12	BJ/V	3545
Mercury Digestion	Completed			10/04/12	X/X	SW7471
TCLP Extraction for Metals	Completed			10/03/12	X	EPA 1311
Total Metals Digest	Completed			10/03/12	AG	SW846 - 3050

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-4 4-8 FT

Phoenix I.D.: BC78091

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Field Extraction	Completed			10/02/12	CB	SW5035
TPH by GC (Extractable Products)						
Ext. Petroleum HC	ND	10	mg/Kg	10/05/12	JRB	CT ETPH/8015
Identification	ND		mg/Kg	10/05/12	JRB	CT ETPH/8015
QA/QC Surrogates						
% n-Pentacosane	50		%	10/05/12	JRB	50 - 150 %
Polychlorinated Biphenyls						
PCB-1016	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1221	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1232	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1242	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1248	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1254	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1260	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1262	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1268	ND	340	ug/Kg	10/04/12	AW	SW 8082
QA/QC Surrogates						
% DCBP	74		%	10/04/12	AW	30 - 150 %
% TCMX	83		%	10/04/12	AW	30 - 150 %
Volatiles						
1,1,1,2-Tetrachloroethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,1,1-Trichloroethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,1,2,2-Tetrachloroethane	ND	3.2	ug/Kg	10/08/12	H/J	SW8260
1,1,2-Trichloroethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloropropene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichlorobenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichloropropane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trichlorobenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trimethylbenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromo-3-chloropropane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromoethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichlorobenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloroethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloropropane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,3,5-Trimethylbenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichlorobenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichloropropane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
1,4-Dichlorobenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
2,2-Dichloropropane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
2-Chlorotoluene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
2-Hexanone	ND	27	ug/Kg	10/08/12	H/J	SW8260
2-Isopropyltoluene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
4-Chlorotoluene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
4-Methyl-2-pentanone	ND	27	ug/Kg	10/08/12	H/J	SW8260
Acetone	ND	110	ug/Kg	10/08/12	H/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-4 4-8 FT

Phoenix I.D.: BC78091

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Acrylonitrile	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Benzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Bromobenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Bromochloromethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Bromodichloromethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Bromoform	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Bromomethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Carbon Disulfide	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Carbon tetrachloride	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Chlorobenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Chloroethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Chloroform	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Chloromethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
cis-1,2-Dichloroethene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
cis-1,3-Dichloropropene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Dibromochloromethane	ND	3.2	ug/Kg	10/08/12	H/J	SW8260
Dibromomethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Dichlorodifluoromethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Ethylbenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Hexachlorobutadiene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Isopropylbenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
m&p-Xylene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Methyl Ethyl Ketone	ND	32	ug/Kg	10/08/12	H/J	SW8260
Methyl t-butyl ether (MTBE)	ND	11	ug/Kg	10/08/12	H/J	SW8260
Methylene chloride	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Naphthalene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
n-Butylbenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
n-Propylbenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
o-Xylene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
p-Isopropyltoluene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
sec-Butylbenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Styrene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
tert-Butylbenzene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Tetrachloroethene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Tetrahydrofuran (THF)	ND	11	ug/Kg	10/08/12	H/J	SW8260
Toluene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Total Xylenes	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
trans-1,2-Dichloroethene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
trans-1,3-Dichloropropene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
trans-1,4-dichloro-2-butene	ND	11	ug/Kg	10/08/12	H/J	SW8260
Trichloroethene	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Trichlorofluoromethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Trichlorotrifluoroethane	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
Vinyl chloride	ND	5.4	ug/Kg	10/08/12	H/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	99		%	10/08/12	H/J	70 - 130 %
% Bromofluorobenzene	99		%	10/08/12	H/J	70 - 130 %
% Dibromofluoromethane	96		%	10/08/12	H/J	70 - 130 %
% Toluene-d8	101		%	10/08/12	H/J	70 - 130 %

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Semivolatiles						
1,2,4,5-Tetrachlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,2,4-Trichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,2-Dichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,2-Diphenylhydrazine	ND	340	ug/Kg	10/04/12	DD	SW 8270
1,3-Dichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,4-Dichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4,5-Trichlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4,6-Trichlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4-Dichlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4-Dimethylphenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrophenol	ND	550	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrotoluene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,6-Dinitrotoluene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Chloronaphthalene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Chlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Methylnaphthalene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Methylphenol (o-cresol)	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Nitroaniline	ND	550	ug/Kg	10/04/12	DD	SW 8270
2-Nitrophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
3&4-Methylphenol (m&p-cresol)	ND	340	ug/Kg	10/04/12	DD	SW 8270
3,3'-Dichlorobenzidine	ND	240	ug/Kg	10/04/12	DD	SW 8270
3-Nitroaniline	ND	550	ug/Kg	10/04/12	DD	SW 8270
4,6-Dinitro-2-methylphenol	ND	990	ug/Kg	10/04/12	DD	SW 8270
4-Bromophenyl phenyl ether	ND	340	ug/Kg	10/04/12	DD	SW 8270
4-Chloro-3-methylphenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
4-Chloroaniline	ND	240	ug/Kg	10/04/12	DD	SW 8270
4-Chlorophenyl phenyl ether	ND	240	ug/Kg	10/04/12	DD	SW 8270
4-Nitroaniline	ND	550	ug/Kg	10/04/12	DD	SW 8270
4-Nitrophenol	ND	990	ug/Kg	10/04/12	DD	SW 8270
Acenaphthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Acenaphthylene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Acetophenone	ND	240	ug/Kg	10/04/12	DD	SW 8270
Aniline	ND	990	ug/Kg	10/04/12	DD	SW 8270
Anthracene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benz(a)anthracene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzidine	ND	410	ug/Kg	10/04/12	DD	SW 8270
Benzo(a)pyrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzo(b)fluoranthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzo(ghi)perylene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzo(k)fluoranthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzoic acid	ND	990	ug/Kg	10/04/12	DD	SW 8270
Benzyl butyl phthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethoxy)methane	ND	240	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethyl)ether	ND	340	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroisopropyl)ether	ND	240	ug/Kg	10/04/12	DD	SW 8270
Bis(2-ethylhexyl)phthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Carbazole	ND	510	ug/Kg	10/04/12	DD	SW 8270
Chrysene	ND	240	ug/Kg	10/04/12	DD	SW 8270

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-4 4-8 FT

Phoenix I.D.: BC78091

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Dibenz(a,h)anthracene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Dibenzofuran	ND	240	ug/Kg	10/04/12	DD	SW 8270
Diethyl phthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Dimethylphthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Di-n-butylphthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Di-n-octylphthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Fluoranthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Fluorene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobutadiene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachlorocyclopentadiene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachloroethane	ND	240	ug/Kg	10/04/12	DD	SW 8270
Indeno(1,2,3-cd)pyrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Isophorone	ND	240	ug/Kg	10/04/12	DD	SW 8270
Naphthalene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Nitrobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodimethylamine	ND	340	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodi-n-propylamine	ND	240	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodiphenylamine	ND	340	ug/Kg	10/04/12	DD	SW 8270
Pentachloronitrobenzene	ND	340	ug/Kg	10/04/12	DD	SW 8270
Pentachlorophenol	ND	340	ug/Kg	10/04/12	DD	SW 8270
Phenanthrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Phenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
Pyrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Pyridine	ND	340	ug/Kg	10/04/12	DD	SW 8270
QA/QC Surrogates						
% 2,4,6-Tribromophenol	75		%	10/04/12	DD	30 - 130 %
% 2-Fluorobiphenyl	70		%	10/04/12	DD	40 - 140 %
% 2-Fluorophenol	71		%	10/04/12	DD	30 - 130 %
% Nitrobenzene-d5	71		%	10/04/12	DD	40 - 140 %
% Phenol-d5	72		%	10/04/12	DD	30 - 130 %
% Terphenyl-d14	92		%	10/04/12	DD	40 - 140 %

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Corrosivity is based solely on the pH analysis performed above.
Ignitability is based solely on the results of the closed cup flashpoint analysis performed above.
The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	10:30
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78092

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-5 2-4 FT

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Silver	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Arsenic	1.2	0.7	mg/Kg	10/04/12	LK	SW6010
Barium	24.5	0.35	mg/Kg	10/04/12	LK	SW6010
Cadmium	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Chromium	10.5	0.35	mg/Kg	10/04/12	LK	SW6010
Copper	4.03	0.35	mg/kg	10/04/12	LK	SW6010
Mercury	< 0.08	0.08	mg/Kg	10/04/12	RS	SW-7471
Nickel	7.07	0.35	mg/Kg	10/04/12	LK	SW6010
Lead	3.93	0.35	mg/Kg	10/04/12	LK	SW6010
Selenium	< 1.4	1.4	mg/Kg	10/04/12	LK	SW6010
TCLP Lead	< 0.10	0.10	mg/L	10/05/12	LK	SW6010
TCLP Metals Digestion	Completed			10/04/12	X/X	SW3005
Zinc	18.6	0.35	mg/Kg	10/04/12	LK	SW6010
Percent Solid	96		%	10/04/12	JL	E160.3
Conductivity - Soil Matrix	130	5	umhos/cm	10/03/12	RWR	SM2510B
Corrosivity	Negative	NONE	S.U.	10/03/12	O/EG	SW846/9045
Flash Point	>200	200	degree F	10/04/12	Y	SW1010
Ignitability	Passed	140	deg F	10/04/12	Y	SW1010
pH - Soil	5.79	0.10	pH Units	10/03/12 23:45	O/EG	4500-H B/9045
Reactivity Cyanide	< 5.1	5.1	mg/Kg	10/04/12	JL/GD	SW 846-7.3
Reactivity Sulfide	< 20	20	mg/Kg	10/04/12	JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	10/04/12	JL/GD	SW 846-7.3
Soil Extraction for PCB	Completed			10/03/12	BB/V	SW3545
Soil Extraction for SVOA	Completed			10/03/12	JJ/V	SW3545
Extraction of CT ETPH	Completed			10/03/12	BJ/V	3545
Mercury Digestion	Completed			10/04/12	X/X	SW7471
TCLP Extraction for Metals	Completed			10/03/12	X	EPA 1311
Total Metals Digest	Completed			10/03/12	AG	SW846 - 3050

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-5 2-4 FT

Phoenix I.D.: BC78092

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Field Extraction	Completed			10/02/12	CB	SW5035
TPH by GC (Extractable Products)						
Ext. Petroleum HC	ND	10	mg/Kg	10/04/12	JRB	CT ETPH/8015
Identification	ND		mg/Kg	10/04/12	JRB	CT ETPH/8015
QA/QC Surrogates						
% n-Pentacosane	68		%	10/04/12	JRB	50 - 150 %
Polychlorinated Biphenyls						
PCB-1016	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1221	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1232	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1242	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1248	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1254	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1260	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1262	ND	340	ug/Kg	10/04/12	AW	SW 8082
PCB-1268	ND	340	ug/Kg	10/04/12	AW	SW 8082
QA/QC Surrogates						
% DCBP	53		%	10/04/12	AW	30 - 150 %
% TCMX	58		%	10/04/12	AW	30 - 150 %
Volatiles						
1,1,1,2-Tetrachloroethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,1,1-Trichloroethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,1,2,2-Tetrachloroethane	ND	2.5	ug/Kg	10/08/12	H/J	SW8260
1,1,2-Trichloroethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloropropene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichlorobenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichloropropane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trichlorobenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trimethylbenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromo-3-chloropropane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromoethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichlorobenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloroethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloropropane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,3,5-Trimethylbenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichlorobenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichloropropane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
1,4-Dichlorobenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
2,2-Dichloropropane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
2-Chlorotoluene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
2-Hexanone	ND	21	ug/Kg	10/08/12	H/J	SW8260
2-Isopropyltoluene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
4-Chlorotoluene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
4-Methyl-2-pentanone	ND	21	ug/Kg	10/08/12	H/J	SW8260
Acetone	ND	82	ug/Kg	10/08/12	H/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-5 2-4 FT

Phoenix I.D.: BC78092

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Acrylonitrile	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Benzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Bromobenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Bromochloromethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Bromodichloromethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Bromoform	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Bromomethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Carbon Disulfide	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Carbon tetrachloride	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Chlorobenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Chloroethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Chloroform	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Chloromethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
cis-1,2-Dichloroethene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
cis-1,3-Dichloropropene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Dibromochloromethane	ND	2.5	ug/Kg	10/08/12	H/J	SW8260
Dibromomethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Dichlorodifluoromethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Ethylbenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Hexachlorobutadiene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Isopropylbenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
m&p-Xylene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Methyl Ethyl Ketone	ND	25	ug/Kg	10/08/12	H/J	SW8260
Methyl t-butyl ether (MTBE)	ND	8.2	ug/Kg	10/08/12	H/J	SW8260
Methylene chloride	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Naphthalene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
n-Butylbenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
n-Propylbenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
o-Xylene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
p-Isopropyltoluene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
sec-Butylbenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Styrene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
tert-Butylbenzene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Tetrachloroethene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Tetrahydrofuran (THF)	ND	8.2	ug/Kg	10/08/12	H/J	SW8260
Toluene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Total Xylenes	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
trans-1,2-Dichloroethene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
trans-1,3-Dichloropropene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
trans-1,4-dichloro-2-butene	ND	8.2	ug/Kg	10/08/12	H/J	SW8260
Trichloroethene	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Trichlorofluoromethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Trichlorotrifluoroethane	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
Vinyl chloride	ND	4.1	ug/Kg	10/08/12	H/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	100		%	10/08/12	H/J	70 - 130 %
% Bromofluorobenzene	97		%	10/08/12	H/J	70 - 130 %
% Dibromofluoromethane	92		%	10/08/12	H/J	70 - 130 %
% Toluene-d8	99		%	10/08/12	H/J	70 - 130 %

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Semivolatiles						
1,2,4,5-Tetrachlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,2,4-Trichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,2-Dichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,2-Diphenylhydrazine	ND	340	ug/Kg	10/04/12	DD	SW 8270
1,3-Dichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,4-Dichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4,5-Trichlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4,6-Trichlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4-Dichlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4-Dimethylphenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrophenol	ND	550	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrotoluene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,6-Dinitrotoluene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Chloronaphthalene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Chlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Methylnaphthalene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Methylphenol (o-cresol)	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Nitroaniline	ND	550	ug/Kg	10/04/12	DD	SW 8270
2-Nitrophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
3&4-Methylphenol (m&p-cresol)	ND	340	ug/Kg	10/04/12	DD	SW 8270
3,3'-Dichlorobenzidine	ND	240	ug/Kg	10/04/12	DD	SW 8270
3-Nitroaniline	ND	550	ug/Kg	10/04/12	DD	SW 8270
4,6-Dinitro-2-methylphenol	ND	990	ug/Kg	10/04/12	DD	SW 8270
4-Bromophenyl phenyl ether	ND	340	ug/Kg	10/04/12	DD	SW 8270
4-Chloro-3-methylphenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
4-Chloroaniline	ND	240	ug/Kg	10/04/12	DD	SW 8270
4-Chlorophenyl phenyl ether	ND	240	ug/Kg	10/04/12	DD	SW 8270
4-Nitroaniline	ND	550	ug/Kg	10/04/12	DD	SW 8270
4-Nitrophenol	ND	990	ug/Kg	10/04/12	DD	SW 8270
Acenaphthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Acenaphthylene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Acetophenone	ND	240	ug/Kg	10/04/12	DD	SW 8270
Aniline	ND	990	ug/Kg	10/04/12	DD	SW 8270
Anthracene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benz(a)anthracene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzidine	ND	410	ug/Kg	10/04/12	DD	SW 8270
Benzo(a)pyrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzo(b)fluoranthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzo(ghi)perylene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzo(k)fluoranthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzoic acid	ND	990	ug/Kg	10/04/12	DD	SW 8270
Benzyl butyl phthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethoxy)methane	ND	240	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethyl)ether	ND	340	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroisopropyl)ether	ND	240	ug/Kg	10/04/12	DD	SW 8270
Bis(2-ethylhexyl)phthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Carbazole	ND	510	ug/Kg	10/04/12	DD	SW 8270
Chrysene	ND	240	ug/Kg	10/04/12	DD	SW 8270

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-5 2-4 FT

Phoenix I.D.: BC78092

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Dibenz(a,h)anthracene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Dibenzofuran	ND	240	ug/Kg	10/04/12	DD	SW 8270
Diethyl phthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Dimethylphthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Di-n-butylphthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Di-n-octylphthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Fluoranthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Fluorene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobutadiene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachlorocyclopentadiene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachloroethane	ND	240	ug/Kg	10/04/12	DD	SW 8270
Indeno(1,2,3-cd)pyrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Isophorone	ND	240	ug/Kg	10/04/12	DD	SW 8270
Naphthalene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Nitrobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodimethylamine	ND	340	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodi-n-propylamine	ND	240	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodiphenylamine	ND	340	ug/Kg	10/04/12	DD	SW 8270
Pentachloronitrobenzene	ND	340	ug/Kg	10/04/12	DD	SW 8270
Pentachlorophenol	ND	340	ug/Kg	10/04/12	DD	SW 8270
Phenanthrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Phenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
Pyrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Pyridine	ND	340	ug/Kg	10/04/12	DD	SW 8270
QA/QC Surrogates						
% 2,4,6-Tribromophenol	67		%	10/04/12	DD	30 - 130 %
% 2-Fluorobiphenyl	67		%	10/04/12	DD	40 - 140 %
% 2-Fluorophenol	64		%	10/04/12	DD	30 - 130 %
% Nitrobenzene-d5	66		%	10/04/12	DD	40 - 140 %
% Phenol-d5	66		%	10/04/12	DD	30 - 130 %
% Terphenyl-d14	86		%	10/04/12	DD	40 - 140 %

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Corrosivity is based solely on the pH analysis performed above.
Ignitability is based solely on the results of the closed cup flashpoint analysis performed above.
The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	11:00
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78093

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-6 2-4 FT

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Silver	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Arsenic	1.1	0.7	mg/Kg	10/04/12	LK	SW6010
Barium	33.5	0.35	mg/Kg	10/04/12	LK	SW6010
Cadmium	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Chromium	10.6	0.35	mg/Kg	10/04/12	LK	SW6010
Copper	10.7	0.35	mg/kg	10/04/12	LK	SW6010
Mercury	< 0.09	0.09	mg/Kg	10/04/12	RS	SW-7471
Nickel	9.85	0.35	mg/Kg	10/04/12	LK	SW6010
Lead	17.4	0.35	mg/Kg	10/04/12	LK	SW6010
Selenium	< 1.4	1.4	mg/Kg	10/04/12	LK	SW6010
TCLP Lead	< 0.10	0.10	mg/L	10/05/12	LK	SW6010
TCLP Metals Digestion	Completed			10/04/12	X/X	SW3005
Zinc	23.3	0.35	mg/Kg	10/04/12	LK	SW6010
Percent Solid	93		%	10/04/12	JL	E160.3
Conductivity - Soil Matrix	160	5	umhos/cm	10/03/12	RWR	SM2510B
Corrosivity	Negative	NONE	S.U.	10/03/12	O/EG	SW846/9045
Flash Point	>200	200	degree F	10/04/12	Y	SW1010
Ignitability	Passed	140	deg F	10/04/12	Y	SW1010
pH - Soil	7.02	0.10	pH Units	10/03/12 23:45	O/EG	4500-H B/9045
Reactivity Cyanide	< 5.3	5.3	mg/Kg	10/04/12	JL/GD	SW 846-7.3
Reactivity Sulfide	< 20	20	mg/Kg	10/04/12	JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	10/04/12	JL/GD	SW 846-7.3
Soil Extraction for PCB	Completed			10/03/12	BB/V	SW3545
Soil Extraction for SVOA	Completed			10/03/12	JJ/V	SW3545
Extraction of CT ETPH	Completed			10/03/12	BJ/V	3545
Mercury Digestion	Completed			10/04/12	X/X	SW7471
TCLP Extraction for Metals	Completed			10/03/12	X	EPA 1311
Total Metals Digest	Completed			10/03/12	AG	SW846 - 3050

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-6 2-4 FT

Phoenix I.D.: BC78093

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Field Extraction	Completed			10/02/12	CB	SW5035
TPH by GC (Extractable Products)						
Ext. Petroleum HC	ND	11	mg/Kg	10/05/12	JRB	CT ETPH/8015
Identification	ND		mg/Kg	10/05/12	JRB	CT ETPH/8015
QA/QC Surrogates						
% n-Pentacosane	62		%	10/05/12	JRB	50 - 150 %
Polychlorinated Biphenyls						
PCB-1016	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1221	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1232	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1242	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1248	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1254	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1260	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1262	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1268	ND	350	ug/Kg	10/04/12	AW	SW 8082
QA/QC Surrogates						
% DCBP	77		%	10/04/12	AW	30 - 150 %
% TCMX	86		%	10/04/12	AW	30 - 150 %
Volatiles						
1,1,1,2-Tetrachloroethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,1,1-Trichloroethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,1,2,2-Tetrachloroethane	ND	2.5	ug/Kg	10/08/12	H/J	SW8260
1,1,2-Trichloroethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloropropene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichlorobenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichloropropane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trichlorobenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trimethylbenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromo-3-chloropropane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromoethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichlorobenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloroethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloropropane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,3,5-Trimethylbenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichlorobenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichloropropane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
1,4-Dichlorobenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
2,2-Dichloropropane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
2-Chlorotoluene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
2-Hexanone	ND	21	ug/Kg	10/08/12	H/J	SW8260
2-Isopropyltoluene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
4-Chlorotoluene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
4-Methyl-2-pentanone	ND	21	ug/Kg	10/08/12	H/J	SW8260
Acetone	ND	85	ug/Kg	10/08/12	H/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-6 2-4 FT

Phoenix I.D.: BC78093

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Acrylonitrile	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Benzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Bromobenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Bromochloromethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Bromodichloromethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Bromoform	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Bromomethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Carbon Disulfide	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Carbon tetrachloride	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Chlorobenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Chloroethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Chloroform	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Chloromethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
cis-1,2-Dichloroethene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
cis-1,3-Dichloropropene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Dibromochloromethane	ND	2.5	ug/Kg	10/08/12	H/J	SW8260
Dibromomethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Dichlorodifluoromethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Ethylbenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Hexachlorobutadiene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Isopropylbenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
m&p-Xylene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Methyl Ethyl Ketone	ND	25	ug/Kg	10/08/12	H/J	SW8260
Methyl t-butyl ether (MTBE)	ND	8.5	ug/Kg	10/08/12	H/J	SW8260
Methylene chloride	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Naphthalene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
n-Butylbenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
n-Propylbenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
o-Xylene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
p-Isopropyltoluene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
sec-Butylbenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Styrene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
tert-Butylbenzene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Tetrachloroethene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Tetrahydrofuran (THF)	ND	8.5	ug/Kg	10/08/12	H/J	SW8260
Toluene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Total Xylenes	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
trans-1,2-Dichloroethene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
trans-1,3-Dichloropropene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
trans-1,4-dichloro-2-butene	ND	8.5	ug/Kg	10/08/12	H/J	SW8260
Trichloroethene	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Trichlorofluoromethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Trichlorotrifluoroethane	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
Vinyl chloride	ND	4.2	ug/Kg	10/08/12	H/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	100		%	10/08/12	H/J	70 - 130 %
% Bromofluorobenzene	98		%	10/08/12	H/J	70 - 130 %
% Dibromofluoromethane	95		%	10/08/12	H/J	70 - 130 %
% Toluene-d8	101		%	10/08/12	H/J	70 - 130 %

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Semivolatiles						
1,2,4,5-Tetrachlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,2,4-Trichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,2-Dichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,2-Diphenylhydrazine	ND	350	ug/Kg	10/04/12	DD	SW 8270
1,3-Dichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,4-Dichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4,5-Trichlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4,6-Trichlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4-Dichlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4-Dimethylphenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrophenol	ND	570	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrotoluene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,6-Dinitrotoluene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Chloronaphthalene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Chlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Methylnaphthalene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Methylphenol (o-cresol)	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Nitroaniline	ND	570	ug/Kg	10/04/12	DD	SW 8270
2-Nitrophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
3&4-Methylphenol (m&p-cresol)	ND	350	ug/Kg	10/04/12	DD	SW 8270
3,3'-Dichlorobenzidine	ND	250	ug/Kg	10/04/12	DD	SW 8270
3-Nitroaniline	ND	570	ug/Kg	10/04/12	DD	SW 8270
4,6-Dinitro-2-methylphenol	ND	1000	ug/Kg	10/04/12	DD	SW 8270
4-Bromophenyl phenyl ether	ND	350	ug/Kg	10/04/12	DD	SW 8270
4-Chloro-3-methylphenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
4-Chloroaniline	ND	250	ug/Kg	10/04/12	DD	SW 8270
4-Chlorophenyl phenyl ether	ND	250	ug/Kg	10/04/12	DD	SW 8270
4-Nitroaniline	ND	570	ug/Kg	10/04/12	DD	SW 8270
4-Nitrophenol	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Acenaphthene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Acenaphthylene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Acetophenone	ND	250	ug/Kg	10/04/12	DD	SW 8270
Aniline	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Anthracene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Benz(a)anthracene	290	250	ug/Kg	10/04/12	DD	SW 8270
Benzidine	ND	420	ug/Kg	10/04/12	DD	SW 8270
Benzo(a)pyrene	270	250	ug/Kg	10/04/12	DD	SW 8270
Benzo(b)fluoranthene	380	250	ug/Kg	10/04/12	DD	SW 8270
Benzo(ghi)perylene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Benzo(k)fluoranthene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Benzoic acid	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Benzyl butyl phthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethoxy)methane	ND	250	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethyl)ether	ND	350	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroisopropyl)ether	ND	250	ug/Kg	10/04/12	DD	SW 8270
Bis(2-ethylhexyl)phthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Carbazole	ND	530	ug/Kg	10/04/12	DD	SW 8270
Chrysene	280	250	ug/Kg	10/04/12	DD	SW 8270

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-6 2-4 FT

Phoenix I.D.: BC78093

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Dibenz(a,h)anthracene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Dibenzofuran	ND	250	ug/Kg	10/04/12	DD	SW 8270
Diethyl phthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Dimethylphthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Di-n-butylphthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Di-n-octylphthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Fluoranthene	550	250	ug/Kg	10/04/12	DD	SW 8270
Fluorene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobutadiene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachlorocyclopentadiene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachloroethane	ND	250	ug/Kg	10/04/12	DD	SW 8270
Indeno(1,2,3-cd)pyrene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Isophorone	ND	250	ug/Kg	10/04/12	DD	SW 8270
Naphthalene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Nitrobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodimethylamine	ND	350	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodi-n-propylamine	ND	250	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodiphenylamine	ND	350	ug/Kg	10/04/12	DD	SW 8270
Pentachloronitrobenzene	ND	350	ug/Kg	10/04/12	DD	SW 8270
Pentachlorophenol	ND	350	ug/Kg	10/04/12	DD	SW 8270
Phenanthrene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Phenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
Pyrene	520	250	ug/Kg	10/04/12	DD	SW 8270
Pyridine	ND	350	ug/Kg	10/04/12	DD	SW 8270
QA/QC Surrogates						
% 2,4,6-Tribromophenol	73		%	10/04/12	DD	30 - 130 %
% 2-Fluorobiphenyl	69		%	10/04/12	DD	40 - 140 %
% 2-Fluorophenol	68		%	10/04/12	DD	30 - 130 %
% Nitrobenzene-d5	68		%	10/04/12	DD	40 - 140 %
% Phenol-d5	69		%	10/04/12	DD	30 - 130 %
% Terphenyl-d14	86		%	10/04/12	DD	40 - 140 %

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Corrosivity is based solely on the pH analysis performed above.
Ignitability is based solely on the results of the closed cup flashpoint analysis performed above.
The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	11:30
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78094

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-7 5.5-7.5 FT

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Silver	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Arsenic	< 0.7	0.7	mg/Kg	10/04/12	LK	SW6010
Barium	13.4	0.35	mg/Kg	10/04/12	LK	SW6010
Cadmium	< 0.35	0.35	mg/Kg	10/04/12	LK	SW6010
Chromium	5.47	0.35	mg/Kg	10/04/12	LK	SW6010
Copper	5.83	0.35	mg/kg	10/04/12	LK	SW6010
Mercury	< 0.08	0.08	mg/Kg	10/04/12	RS	SW-7471
Nickel	6.78	0.35	mg/Kg	10/04/12	LK	SW6010
Lead	5.73	0.35	mg/Kg	10/04/12	LK	SW6010
Selenium	< 1.4	1.4	mg/Kg	10/04/12	LK	SW6010
TCLP Lead	< 0.10	0.10	mg/L	10/05/12	LK	SW6010
TCLP Metals Digestion	Completed			10/04/12	X/X	SW3005
Zinc	14.4	0.35	mg/Kg	10/04/12	LK	SW6010
Percent Solid	95		%	10/04/12	JL	E160.3
Conductivity - Soil Matrix	370	5	umhos/cm	10/03/12	RWR	SM2510B
Corrosivity	Negative	NONE	S.U.	10/03/12	O/EG	SW846/9045
Flash Point	>200	200	degree F	10/04/12	Y	SW1010
Ignitability	Passed	140	deg F	10/04/12	Y	SW1010
pH - Soil	6.27	0.10	pH Units	10/03/12 23:45	O/EG	4500-H B/9045
Reactivity Cyanide	< 5.2	5.2	mg/Kg	10/04/12	JL/GD	SW 846-7.3
Reactivity Sulfide	< 20	20	mg/Kg	10/04/12	JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	10/04/12	JL/GD	SW 846-7.3
Soil Extraction for PCB	Completed			10/03/12	BB/V	SW3545
Soil Extraction for SVOA	Completed			10/03/12	JJ/V	SW3545
Extraction of CT ETPH	Completed			10/03/12	BJ/V	3545
Mercury Digestion	Completed			10/04/12	X/X	SW7471
TCLP Extraction for Metals	Completed			10/03/12	X	EPA 1311
Total Metals Digest	Completed			10/03/12	AG	SW846 - 3050

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-7 5.5-7.5 FT

Phoenix I.D.: BC78094

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Field Extraction	Completed			10/02/12	CB	SW5035
TPH by GC (Extractable Products)						
Ext. Petroleum HC	ND	10	mg/Kg	10/04/12	JRB	CT ETPH/8015
Identification	ND		mg/Kg	10/04/12	JRB	CT ETPH/8015
QA/QC Surrogates						
% n-Pentacosane	57		%	10/04/12	JRB	50 - 150 %
Polychlorinated Biphenyls						
PCB-1016	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1221	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1232	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1242	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1248	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1254	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1260	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1262	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1268	ND	350	ug/Kg	10/04/12	AW	SW 8082
QA/QC Surrogates						
% DCBP	78		%	10/04/12	AW	30 - 150 %
% TCMX	86		%	10/04/12	AW	30 - 150 %
Volatiles						
1,1,1,2-Tetrachloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1,1-Trichloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1,2,2-Tetrachloroethane	ND	2.2	ug/Kg	10/08/12	H/J	SW8260
1,1,2-Trichloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloropropene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trimethylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromo-3-chloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromoethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,3,5-Trimethylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,4-Dichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
2,2-Dichloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
2-Chlorotoluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
2-Hexanone	ND	18	ug/Kg	10/08/12	H/J	SW8260
2-Isopropyltoluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
4-Chlorotoluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
4-Methyl-2-pentanone	ND	18	ug/Kg	10/08/12	H/J	SW8260
Acetone	ND	74	ug/Kg	10/08/12	H/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-7 5.5-7.5 FT

Phoenix I.D.: BC78094

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Acrylonitrile	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Benzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromochloromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromodichloromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromoform	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromomethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Carbon Disulfide	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Carbon tetrachloride	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Chlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Chloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Chloroform	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Chloromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
cis-1,2-Dichloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
cis-1,3-Dichloropropene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Dibromochloromethane	ND	2.2	ug/Kg	10/08/12	H/J	SW8260
Dibromomethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Dichlorodifluoromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Ethylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Hexachlorobutadiene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Isopropylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
m&p-Xylene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Methyl Ethyl Ketone	ND	22	ug/Kg	10/08/12	H/J	SW8260
Methyl t-butyl ether (MTBE)	ND	7.4	ug/Kg	10/08/12	H/J	SW8260
Methylene chloride	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Naphthalene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
n-Butylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
n-Propylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
o-Xylene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
p-Isopropyltoluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
sec-Butylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Styrene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
tert-Butylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Tetrachloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Tetrahydrofuran (THF)	ND	7.4	ug/Kg	10/08/12	H/J	SW8260
Toluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Total Xylenes	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
trans-1,2-Dichloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
trans-1,3-Dichloropropene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
trans-1,4-dichloro-2-butene	ND	7.4	ug/Kg	10/08/12	H/J	SW8260
Trichloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Trichlorofluoromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Trichlorotrifluoroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Vinyl chloride	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	99		%	10/08/12	H/J	70 - 130 %
% Bromofluorobenzene	97		%	10/08/12	H/J	70 - 130 %
% Dibromofluoromethane	96		%	10/08/12	H/J	70 - 130 %
% Toluene-d8	101		%	10/08/12	H/J	70 - 130 %

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Semivolatiles						
1,2,4,5-Tetrachlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,2,4-Trichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,2-Dichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,2-Diphenylhydrazine	ND	340	ug/Kg	10/04/12	DD	SW 8270
1,3-Dichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
1,4-Dichlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4,5-Trichlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4,6-Trichlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4-Dichlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4-Dimethylphenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrophenol	ND	550	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrotoluene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2,6-Dinitrotoluene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Chloronaphthalene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Chlorophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Methylnaphthalene	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Methylphenol (o-cresol)	ND	240	ug/Kg	10/04/12	DD	SW 8270
2-Nitroaniline	ND	550	ug/Kg	10/04/12	DD	SW 8270
2-Nitrophenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
3&4-Methylphenol (m&p-cresol)	ND	340	ug/Kg	10/04/12	DD	SW 8270
3,3'-Dichlorobenzidine	ND	240	ug/Kg	10/04/12	DD	SW 8270
3-Nitroaniline	ND	550	ug/Kg	10/04/12	DD	SW 8270
4,6-Dinitro-2-methylphenol	ND	1000	ug/Kg	10/04/12	DD	SW 8270
4-Bromophenyl phenyl ether	ND	340	ug/Kg	10/04/12	DD	SW 8270
4-Chloro-3-methylphenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
4-Chloroaniline	ND	240	ug/Kg	10/04/12	DD	SW 8270
4-Chlorophenyl phenyl ether	ND	240	ug/Kg	10/04/12	DD	SW 8270
4-Nitroaniline	ND	550	ug/Kg	10/04/12	DD	SW 8270
4-Nitrophenol	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Acenaphthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Acenaphthylene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Acetophenone	ND	240	ug/Kg	10/04/12	DD	SW 8270
Aniline	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Anthracene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benz(a)anthracene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzidine	ND	410	ug/Kg	10/04/12	DD	SW 8270
Benzo(a)pyrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzo(b)fluoranthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzo(ghi)perylene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzo(k)fluoranthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Benzoic acid	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Benzyl butyl phthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethoxy)methane	ND	240	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethyl)ether	ND	340	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroisopropyl)ether	ND	240	ug/Kg	10/04/12	DD	SW 8270
Bis(2-ethylhexyl)phthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Carbazole	ND	520	ug/Kg	10/04/12	DD	SW 8270
Chrysene	ND	240	ug/Kg	10/04/12	DD	SW 8270

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-7 5.5-7.5 FT

Phoenix I.D.: BC78094

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Dibenz(a,h)anthracene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Dibenzofuran	ND	240	ug/Kg	10/04/12	DD	SW 8270
Diethyl phthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Dimethylphthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Di-n-butylphthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Di-n-octylphthalate	ND	240	ug/Kg	10/04/12	DD	SW 8270
Fluoranthene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Fluorene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobutadiene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachlorocyclopentadiene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Hexachloroethane	ND	240	ug/Kg	10/04/12	DD	SW 8270
Indeno(1,2,3-cd)pyrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Isophorone	ND	240	ug/Kg	10/04/12	DD	SW 8270
Naphthalene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Nitrobenzene	ND	240	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodimethylamine	ND	340	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodi-n-propylamine	ND	240	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodiphenylamine	ND	340	ug/Kg	10/04/12	DD	SW 8270
Pentachloronitrobenzene	ND	340	ug/Kg	10/04/12	DD	SW 8270
Pentachlorophenol	ND	340	ug/Kg	10/04/12	DD	SW 8270
Phenanthrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Phenol	ND	240	ug/Kg	10/04/12	DD	SW 8270
Pyrene	ND	240	ug/Kg	10/04/12	DD	SW 8270
Pyridine	ND	340	ug/Kg	10/04/12	DD	SW 8270
QA/QC Surrogates						
% 2,4,6-Tribromophenol	68		%	10/04/12	DD	30 - 130 %
% 2-Fluorobiphenyl	66		%	10/04/12	DD	40 - 140 %
% 2-Fluorophenol	67		%	10/04/12	DD	30 - 130 %
% Nitrobenzene-d5	66		%	10/04/12	DD	40 - 140 %
% Phenol-d5	68		%	10/04/12	DD	30 - 130 %
% Terphenyl-d14	90		%	10/04/12	DD	40 - 140 %

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Corrosivity is based solely on the pH analysis performed above.
Ignitability is based solely on the results of the closed cup flashpoint analysis performed above.
The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	12:00
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78095

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-8 2-4 FT

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Silver	< 0.34	0.34	mg/Kg	10/04/12	LK	SW6010
Arsenic	1.3	0.7	mg/Kg	10/04/12	LK	SW6010
Barium	32.7	0.34	mg/Kg	10/04/12	LK	SW6010
Cadmium	< 0.34	0.34	mg/Kg	10/04/12	LK	SW6010
Chromium	8.00	0.34	mg/Kg	10/04/12	LK	SW6010
Copper	6.89	0.34	mg/kg	10/04/12	LK	SW6010
Mercury	< 0.09	0.09	mg/Kg	10/04/12	RS	SW-7471
Nickel	5.99	0.34	mg/Kg	10/04/12	LK	SW6010
Lead	3.86	0.34	mg/Kg	10/04/12	LK	SW6010
Selenium	< 1.4	1.4	mg/Kg	10/04/12	LK	SW6010
TCLP Lead	< 0.10	0.10	mg/L	10/05/12	LK	SW6010
TCLP Metals Digestion	Completed			10/04/12	X/X	SW3005
Zinc	19.4	0.34	mg/Kg	10/04/12	LK	SW6010
Percent Solid	93		%	10/04/12	JL	E160.3
Conductivity - Soil Matrix	360	5	umhos/cm	10/03/12	RWR	SM2510B
Corrosivity	Negative	NONE	S.U.	10/03/12	O/EG	SW846/9045
Flash Point	>200	200	degree F	10/04/12	Y	SW1010
Ignitability	Passed	140	deg F	10/04/12	Y	SW1010
pH - Soil	7.37	0.10	pH Units	10/03/12 23:45	O/EG	4500-H B/9045
Reactivity Cyanide	< 5.3	5.3	mg/Kg	10/04/12	JL/GD	SW 846-7.3
Reactivity Sulfide	< 20	20	mg/Kg	10/04/12	JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	10/04/12	JL/GD	SW 846-7.3
Soil Extraction for PCB	Completed			10/03/12	BB/V	SW3545
Soil Extraction for SVOA	Completed			10/03/12	JJ/V	SW3545
Extraction of CT ETPH	Completed			10/03/12	BJ/V	3545
Mercury Digestion	Completed			10/04/12	X/X	SW7471
TCLP Extraction for Metals	Completed			10/03/12	X	EPA 1311
Total Metals Digest	Completed			10/03/12	AG	SW846 - 3050

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-8 2-4 FT

Phoenix I.D.: BC78095

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Field Extraction	Completed			10/02/12	CB	SW5035
TPH by GC (Extractable Products)						
Ext. Petroleum HC	ND	10	mg/Kg	10/04/12	JRB	CT ETPH/8015
Identification	ND		mg/Kg	10/04/12	JRB	CT ETPH/8015
QA/QC Surrogates						
% n-Pentacosane	53		%	10/04/12	JRB	50 - 150 %
Polychlorinated Biphenyls						
PCB-1016	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1221	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1232	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1242	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1248	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1254	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1260	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1262	ND	350	ug/Kg	10/04/12	AW	SW 8082
PCB-1268	ND	350	ug/Kg	10/04/12	AW	SW 8082
QA/QC Surrogates						
% DCBP	79		%	10/04/12	AW	30 - 150 %
% TCMX	88		%	10/04/12	AW	30 - 150 %
Volatiles						
1,1,1,2-Tetrachloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1,1-Trichloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1,2,2-Tetrachloroethane	ND	2.2	ug/Kg	10/08/12	H/J	SW8260
1,1,2-Trichloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,1-Dichloropropene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2,3-Trichloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2,4-Trimethylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromo-3-chloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dibromoethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,2-Dichloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,3,5-Trimethylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,3-Dichloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
1,4-Dichlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
2,2-Dichloropropane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
2-Chlorotoluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
2-Hexanone	ND	18	ug/Kg	10/08/12	H/J	SW8260
2-Isopropyltoluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
4-Chlorotoluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
4-Methyl-2-pentanone	ND	18	ug/Kg	10/08/12	H/J	SW8260
Acetone	ND	73	ug/Kg	10/08/12	H/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-8 2-4 FT

Phoenix I.D.: BC78095

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Acrylonitrile	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Benzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromochloromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromodichloromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromoform	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Bromomethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Carbon Disulfide	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Carbon tetrachloride	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Chlorobenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Chloroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Chloroform	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Chloromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
cis-1,2-Dichloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
cis-1,3-Dichloropropene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Dibromochloromethane	ND	2.2	ug/Kg	10/08/12	H/J	SW8260
Dibromomethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Dichlorodifluoromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Ethylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Hexachlorobutadiene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Isopropylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
m&p-Xylene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Methyl Ethyl Ketone	ND	22	ug/Kg	10/08/12	H/J	SW8260
Methyl t-butyl ether (MTBE)	ND	7.3	ug/Kg	10/08/12	H/J	SW8260
Methylene chloride	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Naphthalene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
n-Butylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
n-Propylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
o-Xylene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
p-Isopropyltoluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
sec-Butylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Styrene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
tert-Butylbenzene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Tetrachloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Tetrahydrofuran (THF)	ND	7.3	ug/Kg	10/08/12	H/J	SW8260
Toluene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Total Xylenes	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
trans-1,2-Dichloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
trans-1,3-Dichloropropene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
trans-1,4-dichloro-2-butene	ND	7.3	ug/Kg	10/08/12	H/J	SW8260
Trichloroethene	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Trichlorofluoromethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Trichlorotrifluoroethane	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
Vinyl chloride	ND	3.7	ug/Kg	10/08/12	H/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	99		%	10/08/12	H/J	70 - 130 %
% Bromofluorobenzene	98		%	10/08/12	H/J	70 - 130 %
% Dibromofluoromethane	97		%	10/08/12	H/J	70 - 130 %
% Toluene-d8	101		%	10/08/12	H/J	70 - 130 %

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Semivolatiles						
1,2,4,5-Tetrachlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,2,4-Trichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,2-Dichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,2-Diphenylhydrazine	ND	350	ug/Kg	10/04/12	DD	SW 8270
1,3-Dichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
1,4-Dichlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4,5-Trichlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4,6-Trichlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4-Dichlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4-Dimethylphenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrophenol	ND	560	ug/Kg	10/04/12	DD	SW 8270
2,4-Dinitrotoluene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2,6-Dinitrotoluene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Chloronaphthalene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Chlorophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Methylnaphthalene	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Methylphenol (o-cresol)	ND	250	ug/Kg	10/04/12	DD	SW 8270
2-Nitroaniline	ND	560	ug/Kg	10/04/12	DD	SW 8270
2-Nitrophenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
3&4-Methylphenol (m&p-cresol)	ND	350	ug/Kg	10/04/12	DD	SW 8270
3,3'-Dichlorobenzidine	ND	250	ug/Kg	10/04/12	DD	SW 8270
3-Nitroaniline	ND	560	ug/Kg	10/04/12	DD	SW 8270
4,6-Dinitro-2-methylphenol	ND	1000	ug/Kg	10/04/12	DD	SW 8270
4-Bromophenyl phenyl ether	ND	350	ug/Kg	10/04/12	DD	SW 8270
4-Chloro-3-methylphenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
4-Chloroaniline	ND	250	ug/Kg	10/04/12	DD	SW 8270
4-Chlorophenyl phenyl ether	ND	250	ug/Kg	10/04/12	DD	SW 8270
4-Nitroaniline	ND	560	ug/Kg	10/04/12	DD	SW 8270
4-Nitrophenol	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Acenaphthene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Acenaphthylene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Acetophenone	ND	250	ug/Kg	10/04/12	DD	SW 8270
Aniline	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Anthracene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Benz(a)anthracene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Benzidine	ND	420	ug/Kg	10/04/12	DD	SW 8270
Benzo(a)pyrene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Benzo(b)fluoranthene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Benzo(ghi)perylene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Benzo(k)fluoranthene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Benzoic acid	ND	1000	ug/Kg	10/04/12	DD	SW 8270
Benzyl butyl phthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethoxy)methane	ND	250	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroethyl)ether	ND	350	ug/Kg	10/04/12	DD	SW 8270
Bis(2-chloroisopropyl)ether	ND	250	ug/Kg	10/04/12	DD	SW 8270
Bis(2-ethylhexyl)phthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Carbazole	ND	530	ug/Kg	10/04/12	DD	SW 8270
Chrysene	ND	250	ug/Kg	10/04/12	DD	SW 8270

Project ID: MDC-MAPLE AVE., SEWER
Client ID: B-8 2-4 FT

Phoenix I.D.: BC78095

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Dibenz(a,h)anthracene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Dibenzofuran	ND	250	ug/Kg	10/04/12	DD	SW 8270
Diethyl phthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Dimethylphthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Di-n-butylphthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Di-n-octylphthalate	ND	250	ug/Kg	10/04/12	DD	SW 8270
Fluoranthene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Fluorene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachlorobutadiene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachlorocyclopentadiene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Hexachloroethane	ND	250	ug/Kg	10/04/12	DD	SW 8270
Indeno(1,2,3-cd)pyrene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Isophorone	ND	250	ug/Kg	10/04/12	DD	SW 8270
Naphthalene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Nitrobenzene	ND	250	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodimethylamine	ND	350	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodi-n-propylamine	ND	250	ug/Kg	10/04/12	DD	SW 8270
N-Nitrosodiphenylamine	ND	350	ug/Kg	10/04/12	DD	SW 8270
Pentachloronitrobenzene	ND	350	ug/Kg	10/04/12	DD	SW 8270
Pentachlorophenol	ND	350	ug/Kg	10/04/12	DD	SW 8270
Phenanthrene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Phenol	ND	250	ug/Kg	10/04/12	DD	SW 8270
Pyrene	ND	250	ug/Kg	10/04/12	DD	SW 8270
Pyridine	ND	350	ug/Kg	10/04/12	DD	SW 8270
QA/QC Surrogates						
% 2,4,6-Tribromophenol	75		%	10/04/12	DD	30 - 130 %
% 2-Fluorobiphenyl	67		%	10/04/12	DD	40 - 140 %
% 2-Fluorophenol	69		%	10/04/12	DD	30 - 130 %
% Nitrobenzene-d5	68		%	10/04/12	DD	40 - 140 %
% Phenol-d5	71		%	10/04/12	DD	30 - 130 %
% Terphenyl-d14	87		%	10/04/12	DD	40 - 140 %

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Corrosivity is based solely on the pH analysis performed above.
Ignitability is based solely on the results of the closed cup flashpoint analysis performed above.
The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	0:00
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78096

Project ID: MDC-MAPLE AVE., SEWER
Client ID: TB-10012 - L

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Percent Solid	100	1	%			E160.3
Field Extraction	Completed			10/02/12	CB	SW5035
Volatiles						
1,1,1,2-Tetrachloroethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,1,1-Trichloroethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,1,2,2-Tetrachloroethane	ND	3.0	ug/Kg	10/07/12	H/J	SW8260
1,1,2-Trichloroethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloroethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloroethene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloropropene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,2,3-Trichlorobenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,2,3-Trichloropropane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,2,4-Trichlorobenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,2,4-Trimethylbenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,2-Dibromo-3-chloropropane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,2-Dibromoethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichlorobenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichloroethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichloropropane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,3,5-Trimethylbenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,3-Dichlorobenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,3-Dichloropropane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
1,4-Dichlorobenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
2,2-Dichloropropane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
2-Chlorotoluene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
2-Hexanone	ND	25	ug/Kg	10/07/12	H/J	SW8260
2-Isopropyltoluene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
4-Chlorotoluene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: TB-10012 - L

Phoenix I.D.: BC78096

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
4-Methyl-2-pentanone	ND	25	ug/Kg	10/07/12	H/J	SW8260
Acetone	ND	100	ug/Kg	10/07/12	H/J	SW8260
Acrylonitrile	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Benzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Bromobenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Bromochloromethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Bromodichloromethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Bromoform	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Bromomethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Carbon Disulfide	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Carbon tetrachloride	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Chlorobenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Chloroethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Chloroform	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Chloromethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Dibromochloromethane	ND	3.0	ug/Kg	10/07/12	H/J	SW8260
Dibromomethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Dichlorodifluoromethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Ethylbenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Hexachlorobutadiene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Isopropylbenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
m&p-Xylene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Methyl Ethyl Ketone	ND	30	ug/Kg	10/07/12	H/J	SW8260
Methyl t-butyl ether (MTBE)	ND	10	ug/Kg	10/07/12	H/J	SW8260
Methylene chloride	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Naphthalene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
n-Butylbenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
n-Propylbenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
o-Xylene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
p-Isopropyltoluene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
sec-Butylbenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Styrene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
tert-Butylbenzene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Tetrachloroethene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Tetrahydrofuran (THF)	ND	10	ug/Kg	10/07/12	H/J	SW8260
Toluene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Total Xylenes	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
trans-1,4-dichloro-2-butene	ND	10	ug/Kg	10/07/12	H/J	SW8260
Trichloroethene	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Trichlorofluoromethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Trichlorotrifluoroethane	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
Vinyl chloride	ND	5.0	ug/Kg	10/07/12	H/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	100		%	10/07/12	H/J	70 - 130 %
% Bromofluorobenzene	99		%	10/07/12	H/J	70 - 130 %
% Dibromofluoromethane	93		%	10/07/12	H/J	70 - 130 %

Project ID: MDC-MAPLE AVE., SEWER
Client ID: TB-10012 - L

Phoenix I.D.: BC78096

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
% Toluene-d8	100		%	10/07/12	H/J	70 - 130 %

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

TRIP BLANK INCLUDED 100% SOLID ASSUMED

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If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

November 09, 2012

FOR: Attn: Mr. Barry Giroux
GEI Consultants
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	CB	10/02/12	0:00
Location Code:	GEI	Received by:	LB	10/03/12	9:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	MDC-123290 GEI				

Laboratory Data

SDG ID: GBC78088
Phoenix ID: BC78097

Project ID: MDC-MAPLE AVE., SEWER
Client ID: TB-H

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
Percent Solid	100	1	%			E160.3
Field Extraction	Completed			10/02/12	CB	SW5035
Volatiles						
1,1,1,2-Tetrachloroethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,1,1-Trichloroethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,1,2,2-Tetrachloroethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,1,2-Trichloroethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloroethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloroethene	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,1-Dichloropropene	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,2,3-Trichlorobenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,2,3-Trichloropropane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,2,4-Trichlorobenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,2,4-Trimethylbenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,2-Dibromo-3-chloropropane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,2-Dibromoethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichlorobenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichloroethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,2-Dichloropropane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,3,5-Trimethylbenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,3-Dichlorobenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,3-Dichloropropane	ND	250	ug/Kg	10/07/12	H/J	SW8260
1,4-Dichlorobenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
2,2-Dichloropropane	ND	250	ug/Kg	10/07/12	H/J	SW8260
2-Chlorotoluene	ND	250	ug/Kg	10/07/12	H/J	SW8260
2-Hexanone	ND	1300	ug/Kg	10/07/12	H/J	SW8260
2-Isopropyltoluene	ND	250	ug/Kg	10/07/12	H/J	SW8260
4-Chlorotoluene	ND	250	ug/Kg	10/07/12	H/J	SW8260

Project ID: MDC-MAPLE AVE., SEWER
Client ID: TB-H

Phoenix I.D.: BC78097

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
4-Methyl-2-pentanone	ND	1300	ug/Kg	10/07/12	H/J	SW8260
Acetone	ND	5000	ug/Kg	10/07/12	H/J	SW8260
Acrylonitrile	ND	500	ug/Kg	10/07/12	H/J	SW8260
Benzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Bromobenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Bromochloromethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
Bromodichloromethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
Bromoform	ND	250	ug/Kg	10/07/12	H/J	SW8260
Bromomethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
Carbon Disulfide	ND	250	ug/Kg	10/07/12	H/J	SW8260
Carbon tetrachloride	ND	250	ug/Kg	10/07/12	H/J	SW8260
Chlorobenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Chloroethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
Chloroform	ND	250	ug/Kg	10/07/12	H/J	SW8260
Chloromethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
cis-1,2-Dichloroethene	ND	250	ug/Kg	10/07/12	H/J	SW8260
cis-1,3-Dichloropropene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Dibromochloromethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
Dibromomethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
Dichlorodifluoromethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
Ethylbenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Hexachlorobutadiene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Isopropylbenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
m&p-Xylene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Methyl Ethyl Ketone	ND	3000	ug/Kg	10/07/12	H/J	SW8260
Methyl t-butyl ether (MTBE)	ND	250	ug/Kg	10/07/12	H/J	SW8260
Methylene chloride	ND	500	ug/Kg	10/07/12	H/J	SW8260
Naphthalene	ND	250	ug/Kg	10/07/12	H/J	SW8260
n-Butylbenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
n-Propylbenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
o-Xylene	ND	250	ug/Kg	10/07/12	H/J	SW8260
p-Isopropyltoluene	ND	250	ug/Kg	10/07/12	H/J	SW8260
sec-Butylbenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Styrene	ND	250	ug/Kg	10/07/12	H/J	SW8260
tert-Butylbenzene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Tetrachloroethene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Tetrahydrofuran (THF)	ND	500	ug/Kg	10/07/12	H/J	SW8260
Toluene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Total Xylenes	ND	250	ug/Kg	10/07/12	H/J	SW8260
trans-1,2-Dichloroethene	ND	250	ug/Kg	10/07/12	H/J	SW8260
trans-1,3-Dichloropropene	ND	250	ug/Kg	10/07/12	H/J	SW8260
trans-1,4-dichloro-2-butene	ND	500	ug/Kg	10/07/12	H/J	SW8260
Trichloroethene	ND	250	ug/Kg	10/07/12	H/J	SW8260
Trichlorofluoromethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
Trichlorotrifluoroethane	ND	250	ug/Kg	10/07/12	H/J	SW8260
Vinyl chloride	ND	250	ug/Kg	10/07/12	H/J	SW8260
QA/QC Surrogates						
% 1,2-dichlorobenzene-d4	98		%	10/07/12	H/J	70 - 130 %
% Bromofluorobenzene	101		%	10/07/12	H/J	70 - 130 %
% Dibromofluoromethane	95		%	10/07/12	H/J	70 - 130 %

Project ID: MDC-MAPLE AVE., SEWER
Client ID: TB-H

Phoenix I.D.: BC78097

Parameter	Result	RL/ PQL	Units	Date/Time	By	Reference
% Toluene-d8	102		%	10/07/12	H/J	70 - 130 %

RL/PQL=Reporting/Pratical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

TRIP BLANK INCLUDED 100% SOLID ASSUMED

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Phyllis Shiller, Laboratory Director
November 09, 2012
Reviewed and Released by: Sarah Bell, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

November 09, 2012

QA/QC Data

SDG I.D.: GBC78088

Parameter	Blank	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 210813, QC Sample No: BC77725 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)												
Mercury - Soil	BRL	<0.07	0.10	NC	102	101	1.0	114	124	8.4	70 - 130	30
Comment:												
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.												
QA/QC Batch 210818, QC Sample No: BC78088 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)												
ICP Metals - TCLP Extraction												
Lead	BRL	<0.10	<0.10	NC	105	104	1.0	100	102	2.0	75 - 125	20
QA/QC Batch 210750, QC Sample No: BC78091 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)												
ICP Metals - Soil												
Arsenic	BRL	1.0	<0.74	NC	95.6	98.3	2.8	93.9	94.1	0.2	75 - 125	30
Barium	BRL	20.3	17.6	14.2	97.0	101	4.0	101	102	1.0	75 - 125	30
Cadmium	BRL	<0.34	<0.37	NC	102	102	0.0	97.8	97.8	0.0	75 - 125	30
Chromium	BRL	9.48	8.10	15.7	101	105	3.9	97.5	97.3	0.2	75 - 125	30
Copper	BRL	5.80	4.49	25.5	102	106	3.8	101	102	1.0	75 - 125	30
Lead	BRL	2.22	1.83	NC	94.3	98.9	4.8	97.0	96.9	0.1	75 - 125	30
Nickel	BRL	9.45	9.21	2.60	102	103	1.0	97.1	96.5	0.6	75 - 125	30
Selenium	BRL	<1.4	<1.5	NC	84.1	86.9	3.3	82.8	82.9	0.1	75 - 125	30
Silver	BRL	<0.34	<0.37	NC	92.4	98.6	6.5	96.2	96.2	0.0	75 - 125	30
Zinc	BRL	13.6	12.4	9.20	100	98.9	1.1	97.7	97.3	0.4	75 - 125	30

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QA/QC Report

November 09, 2012

QA/QC Data

SDG I.D.: GBC78088

Parameter	Blank	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 210704, QC Sample No: BC77454 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093)												
Reactivity Cyanide	BRL	<7.5	<7.5	NC	103						85 - 115	30
QA/QC Batch 210827, QC Sample No: BC77789 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)												
Flash Point		>200	>200	NC	100						85 - 115	30
QA/QC Batch 210780, QC Sample No: BC78088 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)												
Conductivity - Soil Matrix	BRL	420	460	9.10	101						85 - 115	30
QA/QC Batch 210815, QC Sample No: BC78094 (BC78094, BC78095)												
Reactivity Cyanide	BRL	<5.2	<5.2	NC	105						85 - 115	30
QA/QC Batch 210808, QC Sample No: BC78647 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)												
pH - Soil		6.72	6.65	1.00	98.4						85 - 115	20

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QA/QC Report

November 09, 2012

QA/QC Data

SDG I.D.: GBC78088

QA/QC Batch 210672, QC Sample No: BC77964 (BC78088, BC78089, BC78090, BC78091)

Semivolatiles - Soil

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
1,2,4,5-Tetrachlorobenzene	ND	60	59	1.7	63	63	0.0	30 - 130	30	
1,2,4-Trichlorobenzene	ND	60	60	0.0	66	65	1.5	30 - 130	30	
1,2-Dichlorobenzene	ND	59	59	0.0	64	64	0.0	30 - 130	30	
1,2-Diphenylhydrazine	ND	64	62	3.2	64	65	1.6	30 - 130	30	
1,3-Dichlorobenzene	ND	57	58	1.7	62	62	0.0	30 - 130	30	
1,4-Dichlorobenzene	ND	59	59	0.0	63	63	0.0	30 - 130	30	
2,4,5-Trichlorophenol	ND	64	63	1.6	63	63	0.0	30 - 130	30	
2,4,6-Trichlorophenol	ND	65	64	1.6	63	64	1.6	30 - 130	30	
2,4-Dichlorophenol	ND	65	63	3.1	66	67	1.5	30 - 130	30	
2,4-Dimethylphenol	ND	43	42	2.4	44	45	2.2	30 - 130	30	
2,4-Dinitrophenol	ND	<5	<5	NC	<5	<5	NC	30 - 130	30	l,m
2,4-Dinitrotoluene	ND	66	63	4.7	66	68	3.0	30 - 130	30	
2,6-Dinitrotoluene	ND	65	64	1.6	67	68	1.5	30 - 130	30	
2-Chloronaphthalene	ND	61	61	0.0	68	70	2.9	30 - 130	30	
2-Chlorophenol	ND	61	61	0.0	67	67	0.0	30 - 130	30	
2-Methylnaphthalene	ND	59	58	1.7	63	63	0.0	30 - 130	30	
2-Methylphenol (o-cresol)	ND	62	61	1.6	66	67	1.5	30 - 130	30	
2-Nitroaniline	ND	137	112	20.1	131	137	4.5	30 - 130	30	l,m
2-Nitrophenol	ND	58	57	1.7	70	69	1.4	30 - 130	30	
3&4-Methylphenol (m&p-cresol)	ND	65	64	1.6	68	69	1.5	30 - 130	30	
3,3'-Dichlorobenzidine	ND	108	105	2.8	96	99	3.1	30 - 130	30	
3-Nitroaniline	ND	118	107	9.8	109	112	2.7	30 - 130	30	
4,6-Dinitro-2-methylphenol	ND	20	14	35.3	53	58	9.0	30 - 130	30	l,r
4-Bromophenyl phenyl ether	ND	63	66	4.7	65	63	3.1	30 - 130	30	
4-Chloro-3-methylphenol	ND	65	63	3.1	62	62	0.0	30 - 130	30	
4-Chloroaniline	ND	103	99	4.0	98	100	2.0	30 - 130	30	
4-Chlorophenyl phenyl ether	ND	66	64	3.1	68	68	0.0	30 - 130	30	
4-Nitroaniline	ND	68	64	6.1	69	71	2.9	30 - 130	30	
4-Nitrophenol	ND	72	60	18.2	72	77	6.7	30 - 130	30	
Acenaphthene	ND	62	62	0.0	67	68	1.5	30 - 130	30	
Acenaphthylene	ND	62	61	1.6	67	68	1.5	30 - 130	30	
Acetophenone	ND	64	64	0.0	70	70	0.0	30 - 130	30	
Aniline	ND	109	109	0.0	106	109	2.8	30 - 130	30	
Anthracene	ND	63	62	1.6	71	72	1.4	30 - 130	30	
Benz(a)anthracene	ND	64	64	0.0	66	68	3.0	30 - 130	30	
Benzidine	ND	70	59	17.1	33	34	3.0	30 - 130	30	
Benzo(a)pyrene	ND	61	61	0.0	63	63	0.0	30 - 130	30	
Benzo(b)fluoranthene	ND	65	66	1.5	76	76	0.0	30 - 130	30	
Benzo(ghi)perylene	ND	62	57	8.4	55	60	8.7	30 - 130	30	
Benzo(k)fluoranthene	ND	66	66	0.0	76	73	4.0	30 - 130	30	
Benzyl butyl phthalate	ND	65	70	7.4	83	84	1.2	30 - 130	30	

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Bis(2-chloroethoxy)methane	ND	64	63	1.6	69	69	0.0	30 - 130	30
Bis(2-chloroethyl)ether	ND	63	63	0.0	65	65	0.0	30 - 130	30
Bis(2-chloroisopropyl)ether	ND	60	60	0.0	64	64	0.0	30 - 130	30
Bis(2-ethylhexyl)phthalate	ND	64	70	9.0	73	74	1.4	30 - 130	30
Carbazole	ND	96	88	8.7	123	127	3.2	30 - 130	30
Chrysene	ND	64	64	0.0	63	65	3.1	30 - 130	30
Dibenz(a,h)anthracene	ND	64	60	6.5	61	65	6.3	30 - 130	30
Dibenzofuran	ND	63	62	1.6	67	68	1.5	30 - 130	30
Diethyl phthalate	ND	65	64	1.6	67	66	1.5	30 - 130	30
Dimethylphthalate	ND	65	64	1.6	69	69	0.0	30 - 130	30
Di-n-butylphthalate	ND	65	67	3.0	96	95	1.0	30 - 130	30
Di-n-octylphthalate	ND	65	68	4.5	57	57	0.0	30 - 130	30
Fluoranthene	ND	67	63	6.2	100	103	3.0	30 - 130	30
Fluorene	ND	64	62	3.2	66	67	1.5	30 - 130	30
Hexachlorobenzene	ND	64	66	3.1	68	67	1.5	30 - 130	30
Hexachlorobutadiene	ND	60	60	0.0	65	65	0.0	30 - 130	30
Hexachlorocyclopentadiene	ND	64	61	4.8	57	56	1.8	30 - 130	30
Hexachloroethane	ND	58	58	0.0	63	63	0.0	30 - 130	30
Indeno(1,2,3-cd)pyrene	ND	63	59	6.6	57	61	6.8	30 - 130	30
Isophorone	ND	64	64	0.0	69	68	1.5	30 - 130	30
Naphthalene	ND	50	49	2.0	54	54	0.0	30 - 130	30
Nitrobenzene	ND	62	61	1.6	66	67	1.5	30 - 130	30
N-Nitrosodimethylamine	ND	56	56	0.0	57	55	3.6	30 - 130	30
N-Nitrosodi-n-propylamine	ND	65	65	0.0	70	71	1.4	30 - 130	30
N-Nitrosodiphenylamine	ND	72	69	4.3	71	73	2.8	30 - 130	30
Pentachloronitrobenzene	ND	63	66	4.7	74	74	0.0	30 - 130	30
Pentachlorophenol	ND	42	38	10.0	56	59	5.2	30 - 130	30
Phenanthrene	ND	65	64	1.6	70	70	0.0	30 - 130	30
Phenol	ND	63	64	1.6	72	73	1.4	30 - 130	30
Pyrene	ND	70	66	5.9	110	112	1.8	30 - 130	30
Pyridine	ND	50	49	2.0	47	46	2.2	30 - 130	30
% 2,4,6-Tribromophenol	70	65	67	3.0	64	63	1.6	30 - 130	30
% 2-Fluorobiphenyl	63	60	60	0.0	67	68	1.5	40 - 140	30
% 2-Fluorophenol	63	59	59	0.0	66	66	0.0	30 - 130	30
% Nitrobenzene-d5	66	61	61	0.0	64	66	3.1	40 - 140	30
% Phenol-d5	68	61	61	0.0	66	67	1.5	30 - 130	30
% Terphenyl-d14	72	72	68	5.7	123	123	0.0	40 - 140	30

Comment:

Additional 8270 criteria: 20% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 15-110%, for soils 30-130%)

QA/QC Batch 210677, QC Sample No: BC78006 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

TPH by GC (Extractable Products) - Soil

Ext. Petroleum HC	ND	62	55	12.0	71	61	15.2	50 - 150	30
% n-Pentacosane	56	58	51	12.8	72	63	13.3	50 - 150	30

QA/QC Batch 210746, QC Sample No: BC78092 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

Polychlorinated Biphenyls - Soil

PCB-1016	ND	82	78	5.0	83	73	12.8	40 - 140	30
PCB-1221	ND							40 - 140	30
PCB-1232	ND							40 - 140	30
PCB-1242	ND							40 - 140	30

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
PCB-1248	ND							40 - 140	30	
PCB-1254	ND							40 - 140	30	
PCB-1260	ND	81	77	5.1	83	73	12.8	40 - 140	30	
PCB-1262	ND							40 - 140	30	
PCB-1268	ND							40 - 140	30	
% DCBP (Surrogate Rec)	74	78	74	5.3	78	70	10.8	30 - 150	30	
% TCMX (Surrogate Rec)	75	79	75	5.2	78	70	10.8	30 - 150	30	
QA/QC Batch 210745, QC Sample No: BC78092 (BC78092, BC78093, BC78094, BC78095)										
Semivolatiles - Soil										
1,2,4,5-Tetrachlorobenzene	ND	47	57	19.2	59	60	1.7	30 - 130	30	
1,2,4-Trichlorobenzene	ND	50	59	16.5	62	62	0.0	30 - 130	30	
1,2-Dichlorobenzene	ND	49	58	16.8	62	62	0.0	30 - 130	30	
1,2-Diphenylhydrazine	ND	47	57	19.2	59	67	12.7	30 - 130	30	
1,3-Dichlorobenzene	ND	48	57	17.1	60	60	0.0	30 - 130	30	
1,4-Dichlorobenzene	ND	49	58	16.8	61	61	0.0	30 - 130	30	
2,4,5-Trichlorophenol	ND	47	59	22.6	60	71	16.8	30 - 130	30	
2,4,6-Trichlorophenol	ND	50	62	21.4	63	66	4.7	30 - 130	30	
2,4-Dichlorophenol	ND	49	61	21.8	62	63	1.6	30 - 130	30	
2,4-Dimethylphenol	ND	33	41	21.6	42	45	6.9	30 - 130	30	
2,4-Dinitrophenol	ND	<5	<5	NC	11	8.7	23.4	30 - 130	30	l,m
2,4-Dinitrotoluene	ND	45	56	21.8	62	74	17.6	30 - 130	30	
2,6-Dinitrotoluene	ND	48	59	20.6	63	68	7.6	30 - 130	30	
2-Chloronaphthalene	ND	51	61	17.9	63	62	1.6	30 - 130	30	
2-Chlorophenol	ND	50	60	18.2	63	63	0.0	30 - 130	30	
2-Methylnaphthalene	ND	47	57	19.2	59	59	0.0	30 - 130	30	
2-Methylphenol (o-cresol)	ND	49	62	23.4	63	62	1.6	30 - 130	30	
2-Nitroaniline	ND	85	114	29.1	122	>150	NC	30 - 130	30	m
2-Nitrophenol	ND	48	59	20.6	68	63	7.6	30 - 130	30	
3&4-Methylphenol (m&p-cresol)	ND	52	64	20.7	65	66	1.5	30 - 130	30	
3,3'-Dichlorobenzidine	ND	77	89	14.5	88	79	10.8	30 - 130	30	
3-Nitroaniline	ND	75	99	27.6	99	138	32.9	30 - 130	30	m,r
4,6-Dinitro-2-methylphenol	ND	20	25	22.2	63	54	15.4	30 - 130	30	l
4-Bromophenyl phenyl ether	ND	54	62	13.8	59	57	3.4	30 - 130	30	
4-Chloro-3-methylphenol	ND	46	57	21.4	57	67	16.1	30 - 130	30	
4-Chloroaniline	ND	74	93	22.8	89	86	3.4	30 - 130	30	
4-Chlorophenyl phenyl ether	ND	50	60	18.2	63	68	7.6	30 - 130	30	
4-Nitroaniline	ND	49	61	21.8	62	74	17.6	30 - 130	30	
4-Nitrophenol	ND	41	58	34.3	78	80	2.5	30 - 130	30	r
Acenaphthene	ND	50	60	18.2	63	64	1.6	30 - 130	30	
Acenaphthylene	ND	50	60	18.2	62	64	3.2	30 - 130	30	
Acetophenone	ND	52	64	20.7	65	66	1.5	30 - 130	30	
Aniline	ND	82	100	19.8	101	94	7.2	30 - 130	30	
Anthracene	ND	51	61	17.9	65	65	0.0	30 - 130	30	
Benz(a)anthracene	ND	52	62	17.5	66	67	1.5	30 - 130	30	
Benzidine	ND	61	74	19.3	23	3.9	142.0	30 - 130	30	m,r
Benzo(a)pyrene	ND	50	61	19.8	63	63	0.0	30 - 130	30	
Benzo(b)fluoranthene	ND	57	72	23.3	73	68	7.1	30 - 130	30	
Benzo(ghi)perylene	ND	40	48	18.2	59	71	18.5	30 - 130	30	
Benzo(k)fluoranthene	ND	61	70	13.7	74	69	7.0	30 - 130	30	
Benzyl butyl phthalate	ND	56	65	14.9	84	79	6.1	30 - 130	30	
Bis(2-chloroethoxy)methane	ND	52	63	19.1	66	65	1.5	30 - 130	30	
Bis(2-chloroethyl)ether	ND	50	59	16.5	66	64	3.1	30 - 130	30	

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Bis(2-chloroisopropyl)ether	ND	50	59	16.5	62	62	0.0	30 - 130	30	
Bis(2-ethylhexyl)phthalate	ND	55	64	15.1	76	77	1.3	30 - 130	30	
Carbazole	ND	80	101	23.2	116	100	14.8	30 - 130	30	
Chrysene	ND	52	61	15.9	65	64	1.6	30 - 130	30	
Dibenz(a,h)anthracene	ND	42	51	19.4	61	72	16.5	30 - 130	30	
Dibenzofuran	ND	49	60	20.2	61	64	4.8	30 - 130	30	
Diethyl phthalate	ND	49	58	16.8	63	70	10.5	30 - 130	30	
Dimethylphthalate	ND	51	60	16.2	65	67	3.0	30 - 130	30	
Di-n-butylphthalate	ND	63	72	13.3	88	78	12.0	30 - 130	30	
Di-n-octylphthalate	ND	52	59	12.6	57	63	10.0	30 - 130	30	
Fluoranthene	ND	64	80	22.2	96	74	25.9	30 - 130	30	
Fluorene	ND	48	58	18.9	60	66	9.5	30 - 130	30	
Hexachlorobenzene	ND	56	62	10.2	63	56	11.8	30 - 130	30	
Hexachlorobutadiene	ND	50	58	14.8	63	62	1.6	30 - 130	30	
Hexachlorocyclopentadiene	ND	38	49	25.3	43	<5	NC	30 - 130	30	m
Hexachloroethane	ND	48	57	17.1	61	59	3.3	30 - 130	30	
Indeno(1,2,3-cd)pyrene	ND	42	49	15.4	60	71	16.8	30 - 130	30	
Isophorone	ND	53	63	17.2	66	66	0.0	30 - 130	30	
Naphthalene	ND	41	48	15.7	51	51	0.0	30 - 130	30	
Nitrobenzene	ND	50	61	19.8	63	63	0.0	30 - 130	30	
N-Nitrosodimethylamine	ND	43	47	8.9	55	53	3.7	30 - 130	30	
N-Nitrosodi-n-propylamine	ND	53	66	21.8	66	68	3.0	30 - 130	30	
N-Nitrosodiphenylamine	ND	51	62	19.5	65	83	24.3	30 - 130	30	
Pentachloronitrobenzene	ND	54	63	15.4	70	63	10.5	30 - 130	30	
Pentachlorophenol	ND	33	39	16.7	61	38	46.5	30 - 130	30	r
Phenanthrene	ND	52	62	17.5	66	66	0.0	30 - 130	30	
Phenol	ND	55	67	19.7	68	69	1.5	30 - 130	30	
Pyrene	ND	70	88	22.8	104	74	33.7	30 - 130	30	r
Pyridine	ND	37	45	19.5	42	37	12.7	30 - 130	30	
% 2,4,6-Tribromophenol	75	55	62	12.0	63	68	7.6	30 - 130	30	
% 2-Fluorobiphenyl	65	51	59	14.5	63	62	1.6	40 - 140	30	
% 2-Fluorophenol	68	50	59	16.5	63	64	1.6	30 - 130	30	
% Nitrobenzene-d5	66	49	59	18.5	61	63	3.2	40 - 140	30	
% Phenol-d5	69	50	61	19.8	62	64	3.2	30 - 130	30	
% Terphenyl-d14	72	79	97	20.5	108	72	40.0	40 - 140	30	r

Comment:

Additional 8270 criteria: 20% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 15-110%, for soils 30-130%)

QA/QC Batch 211070, QC Sample No: BC78097 (BC78088, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095, BC78096, BC78097 (50X))

Volatiles - Soil

1,1,1,2-Tetrachloroethane	ND	102	105	2.9				70 - 130	30	
1,1,1-Trichloroethane	ND	104	106	1.9				70 - 130	30	
1,1,2,2-Tetrachloroethane	ND	89	88	1.1				70 - 130	30	
1,1,2-Trichloroethane	ND	106	109	2.8				70 - 130	30	
1,1-Dichloroethane	ND	105	106	0.9				70 - 130	30	
1,1-Dichloroethene	ND	102	104	1.9				70 - 130	30	
1,1-Dichloropropene	ND	98	101	3.0				70 - 130	30	
1,2,3-Trichlorobenzene	ND	75	84	11.3				70 - 130	30	
1,2,3-Trichloropropane	ND	102	103	1.0				70 - 130	30	
1,2,4-Trichlorobenzene	ND	64	71	10.4				70 - 130	30	l
1,2,4-Trimethylbenzene	ND	88	95	7.7				70 - 130	30	
1,2-Dibromo-3-chloropropane	ND	110	112	1.8				70 - 130	30	

QA/QC Data

SDG I.D.: GBC78088

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
1,2-Dibromoethane	ND	104	105	1.0				70 - 130	30	
1,2-Dichlorobenzene	ND	87	93	6.7				70 - 130	30	
1,2-Dichloroethane	ND	105	105	0.0				70 - 130	30	
1,2-Dichloropropane	ND	107	107	0.0				70 - 130	30	
1,3,5-Trimethylbenzene	ND	89	95	6.5				70 - 130	30	
1,3-Dichlorobenzene	ND	82	87	5.9				70 - 130	30	
1,3-Dichloropropane	ND	103	107	3.8				70 - 130	30	
1,4-Dichlorobenzene	ND	79	85	7.3				70 - 130	30	
2,2-Dichloropropane	ND	94	98	4.2				70 - 130	30	
2-Chlorotoluene	ND	92	97	5.3				70 - 130	30	
2-Hexanone	ND	81	85	4.8				70 - 130	30	
2-Isopropyltoluene	ND	88	98	10.8				70 - 130	30	
4-Chlorotoluene	ND	83	88	5.8				70 - 130	30	
4-Methyl-2-pentanone	ND	103	106	2.9				70 - 130	30	
Acetone	ND	61	65	6.3				70 - 130	30	l
Acrylonitrile	ND	99	102	3.0				70 - 130	30	
Benzene	ND	103	104	1.0				70 - 130	30	
Bromobenzene	ND	96	99	3.1				70 - 130	30	
Bromochloromethane	ND	103	106	2.9				70 - 130	30	
Bromodichloromethane	ND	106	108	1.9				70 - 130	30	
Bromoform	ND	108	110	1.8				70 - 130	30	
Bromomethane	ND	99	101	2.0				70 - 130	30	
Carbon Disulfide	ND	96	96	0.0				70 - 130	30	
Carbon tetrachloride	ND	102	103	1.0				70 - 130	30	
Chlorobenzene	ND	94	97	3.1				70 - 130	30	
Chloroethane	ND	100	100	0.0				70 - 130	30	
Chloroform	ND	105	105	0.0				70 - 130	30	
Chloromethane	ND	91	91	0.0				70 - 130	30	
cis-1,2-Dichloroethene	ND	106	106	0.0				70 - 130	30	
cis-1,3-Dichloropropene	ND	98	100	2.0				70 - 130	30	
Dibromochloromethane	ND	106	108	1.9				70 - 130	30	
Dibromomethane	ND	105	107	1.9				70 - 130	30	
Dichlorodifluoromethane	ND	75	76	1.3				70 - 130	30	
Ethylbenzene	ND	93	97	4.2				70 - 130	30	
Hexachlorobutadiene	ND	58	84	36.6				70 - 130	30	l,r
Isopropylbenzene	ND	98	103	5.0				70 - 130	30	
m&p-Xylene	ND	91	96	5.3				70 - 130	30	
Methyl ethyl ketone	ND	70	76	8.2				70 - 130	30	
Methyl t-butyl ether (MTBE)	ND	102	105	2.9				70 - 130	30	
Methylene chloride	ND	101	101	0.0				70 - 130	30	
Naphthalene	ND	97	104	7.0				70 - 130	30	
n-Butylbenzene	ND	71	85	17.9				70 - 130	30	
n-Propylbenzene	ND	91	99	8.4				70 - 130	30	
o-Xylene	ND	98	102	4.0				70 - 130	30	
p-Isopropyltoluene	ND	83	94	12.4				70 - 130	30	
sec-Butylbenzene	ND	88	98	10.8				70 - 130	30	
Styrene	ND	94	98	4.2				70 - 130	30	
tert-Butylbenzene	ND	95	105	10.0				70 - 130	30	
Tetrachloroethene	ND	92	95	3.2				70 - 130	30	
Tetrahydrofuran (THF)	ND	101	104	2.9				70 - 130	30	
Toluene	ND	99	101	2.0				70 - 130	30	
trans-1,2-Dichloroethene	ND	99	101	2.0				70 - 130	30	
trans-1,3-Dichloropropene	ND	98	100	2.0				70 - 130	30	

QA/QC Data

SDG I.D.: GBC78088

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
trans-1,4-dichloro-2-butene	ND	88	90	2.2				70 - 130	30
Trichloroethene	ND	110	112	1.8				70 - 130	30
Trichlorofluoromethane	ND	106	108	1.9				70 - 130	30
Trichlorotrifluoroethane	ND	99	103	4.0				70 - 130	30
Vinyl chloride	ND	93	94	1.1				70 - 130	30
% 1,2-dichlorobenzene-d4	99	101	100	1.0				70 - 130	30
% Bromofluorobenzene	97	99	100	1.0				70 - 130	30
% Dibromofluoromethane	96	98	101	3.0				70 - 130	30
% Toluene-d8	100	103	101	2.0				70 - 130	30

Comment:

A blank MS/MSD was analyzed with this batch.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 40-160%.

l = This parameter is outside laboratory lcs/lcsd specified recovery limits.
m = This parameter is outside laboratory ms/msd specified recovery limits.
r = This parameter is outside laboratory rpd specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
November 09, 2012

Sample Criteria Exceedences Report

GBC78088 - GEI

Requested Criteria: None

State: CT

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Reasonable Confidence Protocol
Laboratory Analysis QA/QC Certification Form

Laboratory Name: Phoenix Environmental Labs, Inc. **Client:** GEI

Project Location: MDC-MAPLE AVE., SEWER **Project Number:**

Laboratory Sample ID(s): BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095, BC78096, BC78097

Sampling Date(s): 10/2/2012

RCP Methods Used:

☑ 1311/1312	☑ 6010	☐ 7000	☐ 7196	☑ 7470/7471	☐ 8081	☐ EPH	☐ TO15
☑ 8082	☐ 8151	☑ 8260	☑ 8270	☑ ETPH	☐ 9010/9012	☐ VPH	

1.	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CT DEP method-specific Reasonable Confidence Protocol documents?	☑ Yes ☐ No
1a.	Were the method specified preservation and holding time requirements met?	☑ Yes ☐ No
1b.	EPH and VPH methods only: Was the VPH or EPH method conducted without significant modifications (see section 11.3 of respective RCP methods)	☐ Yes ☐ No ☑ NA
2.	Were all samples received by the laboratory in a condition consistent with that described on the associated Chain-of-Custody document(s)?	☑ Yes ☐ No
3.	Were samples received at an appropriate temperature (< 6 Degrees C)?	☑ Yes ☐ No ☐ NA
4.	Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents acheived? See Sections: SVOA Narration, VOA Narration.	☐ Yes ☑ No
5a.	Were reporting limits specified or referenced on the chain-of-custody?	☐ Yes ☑ No
5b.	Were these reporting limits met?	☐ Yes ☐ No ☑ NA
6.	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	☐ Yes ☑ No ☐ NA
7.	Are project-specific matrix spikes and laboratory duplicates included in the data set?	☑ Yes ☐ No ☐ NA

Note: For all questions to which the response was "No" (with the exception of question #5a, #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A or 1B is "No", the data package does not meet the requirements for "Reasonable Confidence".

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowlegde and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized Signature: _____

Date: Friday, November 09, 2012

Printed Name: Greg Lawrence

Position: Assistant Lab Director

Nov 2007

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

RCP Certification Report

November 09, 2012

SDG I.D.: GBC78088

The client requested a shorter list of elements than the 6010 RCP list.

ETPH Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument: Au-fid1 10/05/12-1 (BC78091, BC78093)

Initial Calibration (FID1 - ETPH_1) - The initial calibration curve was within method criteria and had a %RSD less than 30%.

The daily continuing calibration standard was within method criteria of +/- 30% RSD.

As per section 7.2.3, a discrimination check standard was run and contained the following outliers:C36

Printed Name Jeff Bucko
Position: Chemist
Date: 10/5/2012

Instrument: Au-fid1 10/08/12-2 (BC78090)

Initial Calibration (FID1 - ETPH_1) - The initial calibration curve was within method criteria and had a %RSD less than 30%.

The daily continuing calibration standard was within method criteria of +/- 30% RSD.

As per section 7.2.3, a discrimination check standard was run and contained the following outliers: None

Printed Name Jeff Bucko
Position: Chemist
Date: 10/8/2012

Instrument: Au-fid84 10/04/12-2 (BC78092, BC78094, BC78095)

Initial Calibration (FID84 - ETPH_13) - The initial calibration curve was within method criteria and had a %RSD less than 30%.

The daily continuing calibration standard was within method criteria of +/- 30% RSD.

As per section 7.2.3, a discrimination check standard was run and contained the following outliers: none

Printed Name Jeff Bucko
Position: Chemist
Date: 10/4/2012

Instrument: Au-xl1 10/04/12-2 (BC78088, BC78089)

Initial Calibration (FIDXL1 ETPH_1) - The initial calibration curve was within method criteria and had a %RSD less than 30%.

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SDG I.D.: GBC78088

The daily continuing calibration standard was within method criteria of +/- 30% RSD.

As per section 7.2.3, a discrimination check standard was run and contained the following outliers:C36

Printed Name Jeff Bucko
Position: Chemist
Date: 10/4/2012

QC Comments: QC Batch 10677 10/02/12 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

QC (Batch Specific)

---------- Sample No: BC78006, QA/QC Batch: 210677 ----------

All LCS recoveries were within 50 - 150 with the following exceptions: None.

All LCSD recoveries were within 50 - 150 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Mercury Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument: Merlin 10/04/12-1 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

The method preparation blank contains all of the acids and reagents as the samples; the instrument blanks do not.
The initial calibration met all criteria including a standard run at or below the reporting level.
All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interfernce for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.

Printed Name Rick Schweitzer
Position: Chemist
Date: 10/4/2012

QC Comments: QC Batch 10813 10/04/12 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

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RCP Certification Report

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SDG I.D.: GBC78088

QC (Batch Specific)

---------- Sample No: BC77725, QA/QC Batch: 210813 ----------

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.

ICP Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument: Arcos 10/03/12-1 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

The initial calibration met criteria.
The continuing calibration standards met criteria for all the elements reported. The linear range is defined daily by the calibration range.
The continuing calibration blanks were less than the reporting level for the elements reported.
The ICSA and ICSAB were analyzed at the beginning and end of the run and were within criteria.

Printed Name Laura Kinnin
Position: Chemist
Date: 10/3/2012

Instrument: Arcos 10/04/12-1 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

The initial calibration met criteria.
The continuing calibration standards met criteria for all the elements reported. The linear range is defined daily by the calibration range.
The continuing calibration blanks were less than the reporting level for the elements reported.
The ICSA and ICSAB were analyzed at the beginning and end of the run and were within criteria.

Printed Name Laura Kinnin
Position: Chemist
Date: 10/4/2012

Instrument: Arcos 10/05/12-1 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

The initial calibration met criteria.
The continuing calibration standards met criteria for all the elements reported. The linear range is defined daily by the calibration range.
The continuing calibration blanks were less than the reporting level for the elements reported.
The ICSA and ICSAB were analyzed at the beginning and end of the run and were within criteria.

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RCP Certification Report

November 09, 2012

SDG I.D.: GBC78088

Printed Name Laura Kinnin
Position: Chemist
Date: 10/5/2012

QC Comments: QC Batch 10750 10/03/12 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

QC Comments: QC Batch 10818 10/04/12 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

QC (Site Specific)

---------- Sample No: BC78088, QA/QC Batch: 210818 ----------

All LCS recoveries were within 75 - 125 with the following exceptions: None.

All LCSD recoveries were within 75 - 125 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

All MS recoveries were within 75 - 125 with the following exceptions: None.

All MSD recoveries were within 75 - 125 with the following exceptions: None.

All MS/MSD RPDs were less than 30% with the following exceptions: None.

---------- Sample No: BC78091, QA/QC Batch: 210750 ----------

All LCS recoveries were within 75 - 125 with the following exceptions: None.

All LCSD recoveries were within 75 - 125 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

All MS recoveries were within 75 - 125 with the following exceptions: None.

All MSD recoveries were within 75 - 125 with the following exceptions: None.

All MS/MSD RPDs were less than 30% with the following exceptions: None.

A matrix effect is suspected when a MS/MSD recovery is outside of criteria. No further action is required if LCS/LCSD compounds are within criteria.

PCB Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

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RCP Certification Report

November 09, 2012

SDG I.D.: GBC78088

Instrument: Au-ecd1 10/04/12-1 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

8082 Narration:

The initial calibration RSD for the compound list was less than 15% except for the following compounds: none

The continuing calibration standards were within acceptance criteria except for the following compounds: none

Printed Name Adam Werner
Position: Chemist
Date: 10/4/2012

QC Comments: QC Batch 10746 10/03/12 (BC78088, BC78089, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

QC (Site Specific)

---------- Sample No: BC78092, QA/QC Batch: 210746 ----------

All LCS recoveries were within 40 - 140 with the following exceptions: None.

All LCSD recoveries were within 40 - 140 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

All MS recoveries were within 40 - 140 with the following exceptions: None.

All MSD recoveries were within 40 - 140 with the following exceptions: None.

All MS/MSD RPDs were less than 30% with the following exceptions: None.

A matrix effect is suspected when a MS/MSD recovery is outside of criteria. No further action is required if LCS/LCSD compounds are within criteria.

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RCP Certification Report

November 09, 2012

SDG I.D.: GBC78088

SVOA Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? No.

QC Batch 210672 (Samples: BC78088, BC78089, BC78090, BC78091): -----

One analyte is below the criteria. A low bias for this analyte is likely. (2,4-Dinitrophenol)

The LCS/LCSD recoveries are below the lower range, but within the method criteria. A slight low bias for this analyte is possible. (4,6-Dinitro-2-methylphenol)

The LCS/LCSD RPD exceeds the method criteria for one analyte, but this analyte was not reported in the sample(s) so no variability is suspected. (4,6-Dinitro-2-methylphenol)

The QC recovery for one analyte is above the upper range but were not reported in the sample(s), therefore no significant bias is suspected. (2-Nitroaniline)

QC Batch 210745 (Samples: BC78092, BC78093, BC78094, BC78095): -----

One or more analytes is below the criteria. A low bias for these analytes is likely. (2,4-Dinitrophenol, Benzidine, Hexachlorocyclopentadiene)

The LCS/LCSD recoveries are below the lower range, but within the method criteria. A slight low bias for this analyte is possible. (4,6-Dinitro-2-methylphenol)

The LCS/LCSD RPD exceeds the method criteria for one analyte, but this analyte was not reported in the sample(s) so no variability is suspected. (4-Nitrophenol)

The MS and/or the MSD recovery is above the upper range for one or more analytes that were not reported in the sample(s), therefore no significant bias is suspected. (2-Nitroaniline, 3-Nitroaniline)

Instrument: Chem07 10/03/12-2 (BC78092)

The DDT breakdown and pentachlorophenol & benzidine peak tailing were not evaluated in the DFTPP tune.

Initial Calibration (Chem07/SV_0209): Greater than 90% of the target compounds met calibration criteria with a RSD <20% or >0.99 correlation coefficient. The following compounds had RSDs >20% and <0.99 correlation coefficient: 2,4-dinitrophenol, 2-nitroaniline

The following compounds failed to meet the minimum required response factor: 2-nitrophenol, Hexachlorobenzene

Continuing Calibration:
Greater than 80% of target compounds met continuing calibration criteria with a %D <20. The following compunds had >20% difference from the initial calibration: Benzaldehyde, Hexachlorocyclopentadiene, 3-Nitroaniline, 2,4-Dinitrophenol, 2-Nitroaniline, 4,6-Dinitro-2-methylphenol, Atrazine

Printed Name Damien Drobinski
Position: Chemist
Date: 10/3/2012

Instrument: Chem07 10/04/12-1 (BC78090, BC78091, BC78092, BC78093, BC78094, BC78095)

The DDT breakdown and pentachlorophenol & benzidine peak tailing were not evaluated in the DFTPP tune.

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RCP Certification Report

November 09, 2012

SDG I.D.: GBC78088

Initial Calibration (Chem07/SV_0209): Greater than 90% of the target compounds met calibration criteria with a RSD <20% or >0.99 correlation coefficient. The following compounds had RSDs >20% and <0.99 correlation coefficient: 2,4-dinitrophenol, 2-nitroaniline

The following compounds failed to meet the minimum required response factor: 2-nitrophenol, Hexachlorobenzene

Continuing Calibration:
Greater than 80% of target compounds met continuing calibration criteria with a %D <20. The following compunds had >20% difference from the initial calibration: Benzaldehyde, Atrazine, Parathion, Pyrene, % Terphenyl-d14

Printed Name Damien Drobinski
Position: Chemist
Date: 10/4/2012

Instrument: Chem12 10/04/12-1 (BC78088, BC78089)

The DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.

Initial Calibration (Chem12/SV_0814):

Greater than 90% of the target compounds met calibration criteria with a RSD <20% or >0.99 correlation coefficient. The following compounds had RSDs >20% and <0.99 correlation coefficient: Benzaldehyde, Aniline, 4-chloroaniline, Carbazole, 3,3'-dichlorobenzidine

The following compounds failed to meet the minimum required response factor: 2-nitrophenol, Hexachlorobenzene

Continuing Calibration:
Greater than 80% of target compounds met continuing calibration criteria with a %D <20. The following compounds had >20% difference from the initial calibration: Aniline, 4-Chloroaniline, Pentachlorophenol, Atrazine

Printed Name Damien Drobinski
Position: Chemist
Date: 10/4/2012

QC Comments: QC Batch 10672 10/02/12 (BC78088, BC78089, BC78090, BC78091)

QC Comments: QC Batch 10745 10/03/12 (BC78092, BC78093, BC78094, BC78095)

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RCP Certification Report

November 09, 2012

SDG I.D.: GBC78088

QC (Site Specific)

---------- Sample No: BC78092, QA/QC Batch: 210745 ----------

All LCS recoveries were within 30 - 130 with the following exceptions: 2,4-Dinitrophenol(<5%), 4,6-Dinitro-2-methylphenol(20%)

All LCSD recoveries were within 30 - 130 with the following exceptions: 2,4-Dinitrophenol(<5%), 4,6-Dinitro-2-methylphenol(25%)

All LCS/LCSD RPDs were less than 30% with the following exceptions: 4-Nitrophenol(34.3%)

All MS recoveries were within 30 - 130 with the following exceptions: 2,4-Dinitrophenol(11%), Benzidine(23%)

All MSD recoveries were within 30 - 130 with the following exceptions: 2,4-Dinitrophenol(8.7%), 2-Nitroaniline(>150%), 3-Nitroaniline(138%), Benzidine(3.9%), Hexachlorocyclopentadiene(<5%)

All MS/MSD RPDs were less than 30% with the following exceptions: % Terphenyl-d14(40.0%), 3-Nitroaniline(32.9%), Benzidine(142.0%), Pentachlorophenol(46.5%), Pyrene(33.7%)

A matrix effect is suspected when a MS/MSD recovery is outside of criteria. No further action is required if LCS/LCSD compounds are within criteria.

QC (Batch Specific)

---------- Sample No: BC77964, QA/QC Batch: 210672 ----------

All LCS recoveries were within 30 - 130 with the following exceptions: 2,4-Dinitrophenol(<5%), 2-Nitroaniline(137%), 4,6-Dinitro-2-methylphenol(20%)

All LCSD recoveries were within 30 - 130 with the following exceptions: 2,4-Dinitrophenol(<5%), 4,6-Dinitro-2-methylphenol(14%)

All LCS/LCSD RPDs were less than 30% with the following exceptions: 4,6-Dinitro-2-methylphenol(35.3%)

Additional 8270 criteria: 20% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 15-110%, for soils 30-130%)

VOA Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? No.

QC Batch 211070 (Samples: BC78088, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095, BC78096, BC78097): -----

The LCS and/or the LCSD recovery is below the lower range, but within the method criteria. All of the other QC is acceptable, therefore no significant bias is suspected. (1,2,4-Trichlorobenzene, Hexachlorobutadiene)

The LCS/LCSD recoveries are below the lower range, but within the method criteria. A slight low bias for this analyte is possible. (Acetone)

The LCS/LCSD RPD exceeds the method criteria for one analyte, but this analyte was not reported in the sample(s) so no variability is suspected. (Hexachlorobutadiene)

Instrument: Chem03 10/09/12-2 (BC78089)

Initial Calibration Verification (RCPS_1009):
>90% of target compounds met method criteria.
The following compounds had %RSDs >20%: Acetone

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SDG I.D.: GBC78088

Continuing Calibration Verification:
>80% of target compounds met method criteria. Internal standards were within the 50%-200% deviation from the initial calibration.
The following compounds had % Deviations >20%: None.

Printed Name Johanna Harrington
Position: Chemist
Date: 10/9/2012

Instrument: Chem11 10/05/12-3 (BC78088, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095, BC78096, BC78097)

Initial Calibration Verification (CHEM11/RCPS_0919):
>90% of target compounds met criteria.
The following compounds had %RSDs >20%: None.

Continuing Calibration Verification:
>80% of target compounds met criteria. Internal standards were within the 50%-200% deviation from the initial calibration.
The following compounds had % Deviations >30%:

Printed Name Johanna Harrington
Position: Chemist
Date: 10/5/2012

Instrument: Chem11 10/05/12-4 (BC78088, BC78090, BC78091, BC78092, BC78093, BC78094, BC78095, BC78096, BC78097)

Initial Calibration Verification (CHEM11/RCPS_1005):
>90% of target compounds met criteria.
The following compounds had %RSDs >20%: None.

Continuing Calibration Verification:
>80% of target compounds met criteria. Internal standards were within the 50%-200% deviation from the initial calibration.
The following compounds had % Deviations >30%: None.

Printed Name Johanna Harrington
Position: Chemist
Date: 10/5/2012

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SDG I.D.: GBC78088

QC (Site Specific)

---------- Sample No: BC78097, QA/QC Batch: 211070 ----------

All LCS recoveries were within 70 - 130 with the following exceptions: 1,2,4-Trichlorobenzene(64%), Acetone(61%), Hexachlorobutadiene(58%)

All LCSD recoveries were within 70 - 130 with the following exceptions: Acetone(65%)

All LCS/LCSD RPDs were less than 30% with the following exceptions: Hexachlorobutadiene(36.6%)

A matrix effect is suspected when a MS/MSD recovery is outside of criteria. No further action is required if LCS/LCSD compounds are within criteria. Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 40-160%.

Temperature Narration

The samples in this delivery group were received at 1°C.
(Note acceptance criteria is above freezing up to 6°C)

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Temp: cwic ice | Pg 1 of 1

Data Delivery:
☐ Fax #:
☐ Email:

Customer: GEI Consultants, Inc
Address: 455 Winding Brook Drive, Glastonbury, CT 06033

Project: MDC - Maple Ave Sewer
Report to: Barry Giroux
Invoice to: John McGrane (860)368-5426

Project P.O: MDC-123210(GEI)#
Phone #: 860-368-5340
Fax #: 860-368-5307

Client Sample - Information - Identification

Sampler's Signature: Christine M. Bates Date: 10-2-2012

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
SE=Sediment SL=Sludge S=Soil/Solid W=Wipe O=Other

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	VOC	SVOC	Total Metals	ETPH	PCB	TCLP Lead	Reactivity	Flash Point	Corros. Vity	Conductivity		Soil VOA Vials (✓) methanol (✓) H2O	GL Soil container (8) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 1000ml [ ]	PL H2SO4 [ ] 250ml [ ] 1500ml [ ]	PL HNO3 250ml	PL NaOH 250ml	PL 500ml	Bacteria Bottle
78088	B-1 (1-3)'	S	10-2-12	08:30	X	X	X	X	X	X	X	X	X	X		3	2									
78089	B-2 (4-6)'	↓	↓	09:00												3	2									
78090	B-3 (1-3)'			09:30												3	2									
78091	B-4 (4-8)'			10:00												3	2									
78092	B-5 (2-4)'			10:30												3	2									
78093	B-6 (2-4)'			11:00												3	2									
78094	B-7 (5.5-7.5)'			11:30												3	2									
78095	B-8 (2-4)	↓	↓	12:00												3	2									
78096	TB-10012-L				X																					
78097	TB - H																									

Relinquished by:	Accepted by:	Date:	Time:
Christine M. Bates	[signature]	10/3/12	9:30

RI
☐ Direct Exposure (Residential)
☐ GW
☐ Other

CT
☐ RCP Cert
☐ GW Protection
☐ SW Protection
☐ GA Mobility
☐ GB Mobility
☐ Residential DEC
☐ I/C DEC
☐ Other

MA
☐ MCP Certification
☐ GW-1
☐ GW-2
☐ GW-3
☐ S-1
☐ S-2
☐ S-3
☐ MWRA eSMART
☐ Other

Data Format
☒ Excel
☒ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist
☐ Full Data Package*
☒ Phoenix Std Report
☐ Other

Comments, Special Requirements or Regulations:
Per Barry Run Rcra 8+ Cu, Ni, Zn.
Run all samples for all analysis
(LB)

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☒ Standard
☐ Other
* SURCHARGE APPLIES

State where samples were collected: CT

* SURCHARGE APPLIES