

Greater New Haven Water Pollution Control Authority Protecting the Environment



PROJECT: CWF 2016-02 Closing Regulators 012 & 020

Nicoll Street / Mitchell Drive
Quinnipiac Avenue

New Haven, Connecticut

October, 2017

BID OPENING: February 7, 2018 AT 11:00 AM

**THE SEPARATELY BOUND BIDDER'S
CHECKLIST AND DOCUMENTS ARE
TO BE RETURNED WITH YOUR BID**



GREATER NEW HAVEN
WATER POLLUTION CONTROL AUTHORITY

260 East Street

New Haven, Connecticut 06511

(203) 466-5280

WEB: WWW.GNHWPCA.COM

EMAIL: ENGINEERING@GNHWPCA.COM

EMERGENCY NUMBER: (203) 466-5260

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

BID DOCUMENTS TABLE OF CONTENTS

<u>SECTION</u>	<u>SECTION COLOR</u>	<u>PAGES</u>
INVITATION	White	I-i to I-ii
§ 102-16 SPECIAL SPECIFICATIONS AND NOTES TABLE OF CONTENTS	Yellow	SS-i to SS-ii
MODIFICATIONS TO GNHWPCA STANDARD SPECIFICATIONS 101 THRU 109 TABLE OF CONTENTS	Green	SS-iii
MODIFICATIONS TO GNHWPCA STANDARD SPECIFICATIONS 201 THRU 1210 TABLE OF CONTENTS	Green	SS-iv
SPECIAL TECHNICAL SPECIFICATIONS TABLE OF CONTENTS	Blue	SS-v
APPENDICES TABLE OF CONTENTS	Pink	SS-vi
§102-16 SPECIAL SPECIFICATIONS AND NOTES TABLE OF CONTENTS	Yellow	
NOTICES TO CONTRACTOR	Yellow	SS-1 to SS-2
NOTES 1 THRU 55	Yellow	SS-3 to SS-17
• Connecticut DEEP Required Contract Provisions	White	follows page SS-18
• Contractor's Exempt Purchase Certificate	White	follows page SS-19
• Executive Order No. Three	White	follows page SS-20
• Executive Order No. Seventeen	White	follows page SS-21
• MBE/WBE Memorandum, April 17, 2013	White	follows page SS-22
• Connecticut DEP Project Sign Detail	White	follows page SS-23
• American Iron and Steel (AIS) Requirements	White	follows page SS-24
55. MODIFICATIONS TO THE GNHWPCA STANDARD SPECIFICATIONS 101 THRU 109	Green	SS-25 to SS-30
56. MODIFICATIONS TO THE GNHWPCA STANDARD SPECIFICATIONS 201 THRU 1210	Green	SS-31 to SS-65
57. SPECIAL TECHNICAL SPECIFICATIONS	Blue	SS-66 to SS-81

58. APPENDIX COVER PAGES

APPENDIX A – Geotechnical Data Report	Pink	
APPENDIX B - Construction Schedule	White	SS-82
APPENDIX C – Test Pits	White	SS-83
APPENDIX D – Buckeye R.O.W Restrictions	White	SS-84
	White	SS-85

WAGE RATES

Yellow WR-1

ITEMIZED PROPOSAL

Gold 1 to 16

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Greater New Haven Water Pollution Control Authority (GNHWPCA)

INVITATION TO BID

PROJECT: CWF 2016-02

Closing Regulators 012 & 020
Nicoll Street / Mitchell Drive
Quinnipiac Avenue
New Haven, Connecticut

Sealed bids will be received at the Office of the Director of Finance and Administration of the Greater New Haven Water Pollution Control Authority (Authority) located at 260 East Street, New Haven, Connecticut 06511 for **PROJECT: CWF 2016-02, Closing Regulators 012 & 020, New Haven, Connecticut**, until **February 7, 2018 11:00 AM** at which time and place said bids will be opened publicly and read aloud.

This project consists of the following:

- **012 Location** - Cured in place pipe (CIPP) lining of approximately 500 linear feet of 48" brick sewer from the intersection of Colner Street to Regulator 012 and 480 linear feet of 35"x52" brick sewer from Regulator 012 to Willow Street. Additionally, the project also consists of manhole rehabilitation of six (6) manholes.
- **020 Location** - CIPP lining of approximately 2,620 linear feet of 24" reinforced concrete (RC) sewer and replacing existing RC sewer, at a lower grade, with installing 100 linear feet of new 24" PVC sewer utilizing open cut excavation, One (1) sanitary sewer drop manhole, and surface restoration along Quinnipiac Avenue. Additionally, the project also consists of manhole rehabilitation of Eighteen (18) manholes.

The Information for Bidders, Proposal, Form of Contract, Plans and Specifications will be available on **January 4, 2018** at the Authority's offices located above address. The Plans and a "bid package" containing the Invitation; Labor Rates; Proposal; Special Specifications and Notes can be obtained upon receipt of a non-refundable payment of One Hundred Dollars (\$100.00). Anyone submitting a bid for this project must also have, in their possession, and be listed with GNHWPCA as having purchased a copy of **THE GREATER NEW HAVEN WATER POLLUTION CONTROL AUTHORITY STANDARD SPECIFICATIONS, dated September 12, 2006**, including all revisions thereto. The document can be obtained upon payment of One Hundred Dollars (\$100.00).

A certified check or bid bond, in the amount of ten percent (10%) of the total bid amount must accompany the bid. Said checks or bid bonds will be returned to the unsuccessful bidders upon Award of the Contract to the selected firm and execution of the Agreement. If any bid is not accompanied by a bid bond or check at the specified time for the bid opening, the incomplete bid will not be read and this action will constitute automatic rejection of the bid.

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

Any Contract awarded under this Invitation to Bid is expected to be funded in part by a loan and grant from the State of Connecticut DEEP. Neither the State of Connecticut nor any of its Departments, agencies or employees shall be a party to this Invitation to Bid or any resulting Contract.

A voluntary Pre-Bid Conference will be held at **2:00 PM on January 16, 2018** at the Authority's Headquarters, 260 East Street, New Haven, Connecticut 06511. A trip to the project site will follow.

Bidders are required to comply with 40 CFR 33.24 of the USEPA's policy on the increased utilization of Minority Business Enterprises (MBE) and Women's Business Enterprises (WBE).

The minimum participation rate required by the CTDEP is 3% of the total Contract for price for MBE's and 5% for WBE's.

Bidders are required to comply with the Davis Bacon Act regarding federal wage rate requirements and the State of Connecticut Prevailing Wage rates. Where there is a conflict between the two requirements, the more stringent shall apply.

Bidders are required to use "Iron and steel products" that are "produced in the United States" for this construction project, known as the "American Iron and Steel" Requirements.

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

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

Gabriel Varca

Director of Finance and Administration

102-16: SPECIAL SPECIFICATIONS AND NOTES

TABLE OF CONTENTS

NOTICES TO CONTRACTOR

1.	Description of Work	SS-4
2.	Time for Commencement	SS-4
3.	Time for Completion	SS-4
4.	Liquidated Damages.....	SS-4
5.	Project Coordination.....	SS-5
6.	Pre-Bid Meeting	SS-5
7.	Specialty Items	SS-5
8.	Water Pollution Abatement.....	SS-5
9.	Engineer's Field Office.....	SS-5
10.	Coordination with Adjacent Construction Projects	SS-5
11.	Other Construction and Contractors	SS-6
12.	Access to Site	SS-6
13.	Archaeological Finds	SS-6
14.	Construction Traffic, Scheduling, Access and Storage of Materials.....	SS-6
15.	Daily Paving	SS-8
16.	Winter Construction	SS-8
17.	Project Photographs	SS-8
18.	Call Before-You-Dig	SS-8
19.	Utility Relocation Costs	SS-9
20.	Existing Utility Service Laterals	SS-10
21.	Existing Sidewalk, Driveway and Curbing Damage	SS-10
22.	Existing Sanitary Sewers, Force Mains and Storm Sewers.....	SS-11
23.	Removal of Existing Frames and Covers	SS-11
24.	Surplus and Rejected Excavated Material	SS-11
25.	Dust Control	SS-11
26.	Daily and Weekly Clean Up	SS-10
27.	Signs	SS-12
28.	Road Improvements.....	SS-12
29.	Plugging/Abandoning/Supporting Existing Utilities.....	SS-12
30.	Ongoing Site Improvements near 012-Regulator Manhole	SS-13

31.	Sequence of Construction Outline	SS-13
32.	Construction Safety.....	SS-14
33.	Bid Items	SS-14
34.	List of Drawings.....	SS-15
35.	Bidder's Checklist	SS-15
36.	Pre-Qualifications.....	SS-16
37.	Clean Water Fund	SS-16
38.	DEEP Project Sign	SS-16
39.	DEEP Construction Contract Provisions	SS-17
40.	Clean Water Fund Memorandum (Revised MBE/WBE May 25, 2016)	SS-17
41.	Insurance Requirements.....	SS-17
42.	Requests for Clarification of Bid Documents	SS-17
43.	Basis of Award	SS-17
44.	Payment Provisions.....	SS-17
45.	Addenda	SS-17
46.	Safety and Health Regulations	SS-17
47.	Davis-Bacon Act	SS-18
48.	State Wage Rates	SS-18
49.	Connecticut DEEP Required Contract Provisions.....	SS-20
50.	Contractor's Exempt Purchase Certificate	SS-21
51.	Executive Order No. Three	SS-22
52.	Executive Order No. Seventeen.....	SS-23
53.	MBE/WBE Memorandum (May 25, 2016)	SS-24
54.	Connecticut DEEP Project Sign Detail	SS-25
55.	American Iron and Steel (AIS) Requirements	SS-26

TABLE OF CONTENTS

56. MODIFICATIONS TO THE GNHWPCA SPECIFICATIONS 101 THRU 109

56A. Modification to Item 102 "Bidding Requirements and Conditions"	SS-28
56B. Modification to Item 103 "Award and Execution of Contract"	SS-28
56C. Modification to Item 105 "Control of the Work"	SS-28
56D. Modification to Item 107 "Legal Relations and Responsibility to Public"	SS-30

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

TABLE OF CONTENTS

57. MODIFICATIONS TO THE GNHWPCA SPECIFICATIONS 201 THRU 1210

57A. Modification to Item 205 "Trench Excavation and Backfill":	SS-34
57B. Modification to Item 210 "Temporary Soil Erosion and Water Pollution Control"	SS-35
57C. Modification to Item 407 "Bituminous Concrete Trench Repair":	SS-36
57D. Modification to Item 512 "Sanitary Sewer":	SS-37
57E. Modification to Item 516 "Sanitary Sewer Flow Control and Bypass Pumping"	SS-41
57F. Modification to Item 518 "Sanitary Sewer Cleaning":	SS-43
57G. Modification to Item 520 "Sanitary Sewer Cured-in-place Pipe Lining"	SS-43
57H. Modification to Item 969 "Engineers Field Office":	SS-60
57I. Modification to Item 971 "Maintenance and Protection of Traffic":	SS-60
57J. Modification to Item 985 "Project Survey and Stakeout":	SS-64
57K. Modification to Item 1208 "Sign Face -Sheet Aluminum":	SS-65
57L. Modification to Item 1209 "Painted Pavement Markings":	SS-66
57M. Modification to Item 1210 "Epoxy Resin Pavement Markings":	SS-67

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

TABLE OF CONTENTS

58. SPECIAL TECHNICAL SPECIFICATIONS

SECTION 1500 - UNIFORMED LOCAL AND STATE POLICE OFFICERS.....SS-69

SECTION 1506 DISMANTLING AND PLUGGING EXISTING PIPES AND STRUCTURES.....SS-71

SECTION 1508 CONTROLLED LOW STRENGTH MATERIALSS-73

SECTION 1510 ALTER EXISTING MANHOLE, CATCH BASIN OR DROP INLETSS-76

SECTION 1514 UNIFORMED TRAFFICMAN (FLAGGER)SS-79

SECTION 1620 OBSERVATION WELL DECOMMISSIONINGSS-81

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

TABLE OF CONTENTS

APPENDICIES

Appendix A – Geotechnical Data Report

Appendix B – Not Used

Appendix C – Test-Pits

Appendix D – Buckeye Pipeline – Right of way use restrictions

Appendix E – City of New Haven Plan Approval

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

NOTICES TO CONTRACTOR

a. WORK NEAR UTILITY POLES AND WIRES

The Contractor is hereby alerted to the fact that he will be working in close proximity to or directly under utility poles and overhead wires. The Contractor shall employ extreme caution while working near these and all overhead wires.

The Contractor is solely responsible for complying with all safety regulations and laws including, but not limited to, OSHA when working near these facilities.

In addition, the Contractor shall support and protect all City owned traffic signal poles and overhead wires/support arms. There will be no separate payment for this work.

Refer to the Standard Specifications and Special Specifications and Notes for additional information.

b. JET FUEL LINE

The Contractor is hereby notified that there is an important 42" Welded steel Buckeye jet-fuel line that runs along Quinnipiac Avenue as shown in the plans. Extreme care must be exercised when working near the jet-fuel line by open cut excavation. See Appendix- D for right of way restrictions while working near the jet-fuel line.

c. MAINTENANCE OF FLOW

The Contractor is hereby notified that he is responsible for maintaining flows in the sanitary sewers and laterals at all times during construction. The contractors shall follow the requirements of specification section 516. The flows to be bypass pumped at 012 and 020 locations are given in the "modification to spec section 516". During rehabilitation of regulator manholes, the contractor shall provide means to maintain combined sewer overflows by temporary piping, pumping or other means. The Contractor is responsible for maintaining surface drainage flows throughout the construction limits and to prevent the flooding of adjacent property and streets. The Contractor shall ensure gutter flow can be maintained to the catch basin. If necessary in low spots, the Contractor shall provide for temporary pumping during rain events, if other temporary measures for drainage are not sufficient to prevent street or adjacent property flooding.

Refer to the Standard Specifications and Special Specifications and Notes for additional information.

d. WATER USE – CLEANING AND LINING SEWERS

It shall be the responsibility of the Contractor to contact South Central Connecticut Regional Water Authority (RWA) to determine, and comply with all permit conditions and requirements. GNHWPCA, Local Fire Departments and RWA will require bi-weekly pre-cleaning meetings with the Contractor to designate all available fire hydrants for sewer cleaning use based on the Contractor's schedule. Contractor shall assume that there are fire hydrant(s) available within two (2) miles from the location of the cleaning operations. A \$10,000.00 fine (deduct item) will be assessed to the Contractor for the use of fire hydrants not approved in the bi-weekly pre-cleaning meeting with RWA, Local Fire Departments, and GNHWPCA.

All water cost and water related permits/fees are a pass-through cost without markup or any additional fees. Payments for water use and water related permits/fees shall be made by the Contractor and reimbursed by the Authority.

New Haven - Water from hydrants in New Haven is available through RWA from April 1 through October 31. Any equipment which is intended to store or transport water must be first inspected by the Cross Connections Department of the RWA. Contact Gino Lavorgna at (203) 401-2696 to schedule an appointment. Once the equipment inspection has passed, a Field Inspection Report will be issued. A hydrant permit must then be obtained from the New Haven Fire Department. Once the hydrant permit is obtained, Contractor should bring a copy of the Field Inspection Report and the Hydrant Permit to Vivien Carrano 203-401-2697 at RWA, 90 Sargent Drive, New Haven, to obtain a hydrant meter and backflow preventer from RWA. RWA requires a deposit of \$1,000, cash or check only. The meter is read upon its return to RWA at the completion of the project. The usage is deducted from the deposit, and a check will be mailed for any refund due. If the usage is greater than the deposit, a bill will be sent for the balance due. Water from hydrants is not available from November 1 to March 31.

Hamden, East Haven & Woodbridge - Water from hydrants is available through RWA from April 1 through October 31. Any equipment which is intended to store or transport water must be first inspected by the Cross Connections Department of the RWA. Contact Gino Lavorgna at (203) 401-2696 to schedule an appointment. Once the equipment inspection has passed, a Field Inspection Report will be issued. Contractor should bring a copy of the Field Inspection Report to Vivien Carrano 203-401-2697 at RWA, 90 Sargent Drive, New Haven, to obtain a hydrant meter and backflow preventer from RWA. RWA requires a deposit of \$1,000, cash or check only. The meter is read upon its return to RWA at the completion of the project. The usage is deducted from the deposit, and a check will be mailed for any refund due. If the usage is greater than the deposit, a bill will be sent for the balance due. Water from hydrants is not available from November 1 to March 31. Permits from the local Fire Department are not required; however the Contractor shall notify the Fire Department daily the location of the approved hydrants being used for sewer cleaning purposes.

Water is also available through the RWA from bulk water fill stations located at:

58 East Industrial Road, Branford
Leonardo Drive (Lot 10), North Haven
Crestway Drive, Hamden (Open all year round)
Panagrossi Circle, East Haven
McCausland Court, Cheshire

Water at the bulk fill stations is available from April 1 through October 31. The bulk water fill stations are open 7 days a week, 24 hours a day. Keys to operate the station are available for \$100 deposit. Multiple keys may be obtained, but a deposit of \$100 is required for each key. All usage information is recorded on the key and downloaded once a month. The usage is deducted from the key deposit. Upon depletion of the deposit, a bill will be sent for the balance due.

e. PROJECT COORDINATION/SCHEDULING/STORAGE

The Contractor must clearly understand, and incorporate the cost therefore into the Contract Bid Items, the following requirements:

- i. The Contractor shall be required to coordinate with local businesses, property owners/tenants and utility companies throughout the Contract period at no additional compensation.
- ii. The Contractor is allowed a 12-hour workday and limited night work (with exceptions as detailed in Item 14 of the Special Specifications and Notes).
- iii. The Contractor shall make every effort to limit the parking spaces removed and to maintain existing street parking for as long as possible and to restore it as soon as possible during the construction period.
- iv. The Contractor shall maintain a secure/locked storage area off-site for materials and equipment, unless otherwise approved in writing by the Authority and the City.
- v. The Contractor shall confine all operations involving jackhammers to daytime periods.

f. ACCESS

The Contractor shall be required to perform the construction in a manner that will maintain, throughout the construction period, access to existing businesses and residents within the Project limits, traffic flows of vehicular, bicycle and pedestrian traffic. The Contractor shall schedule and coordinate the construction operations to accommodate temporary work shutdowns, or limited construction activity, in order to maintain building and loading dock access at Wire and Plastic Machinery Corporation, located in 285 Nicoll Street. Additionally, the staging area for CIPP lining of the 35"x52" brick sewer is at the entrance to East Rock Community Magnet School and Wilbur Cross High School. The contractor is required to coordinate construction during periods when the schools are closed.

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

1. Description of Work

The primary goal of the project is to eliminate sanitary overflows at active CSO Regulators 012 & 020.

This project consists of the following:

- **012 Location** - Cured in place pipe (CIPP) lining of approximately 500 linear feet of 48" brick sewer from the intersection of Canner Street to Regulator 012 and 480 linear feet of 35"x52" brick sewer from Regulator 012 to Willow Street. Additionally, the project also consists of manhole rehabilitation of six (6) manholes.
- **020 Location** - CIPP lining of approximately 2,620 linear feet of 24" reinforced concrete (RC) sewer and replacing existing RCP sewer, at a lower grade, with installing 100 linear feet of new 24" PVC sewer utilizing open cut excavation, One (1) sanitary sewer drop manhole, and surface restoration along Quinnipiac Avenue. Additionally, the project also consists of manhole rehabilitation of eighteen (18) manholes.

It is important for the Contractor to understand that this project presents special concerns with maintaining and bypassing existing sanitary sewer flows during CIPP lining and manhole rehabilitation. In addition, bypassing in main sewer lines, the construction will require special considerations, such as construction during low flow periods, installing dams and bypass pipes or temporary pumping. The Contractor also shall note that the existing sanitary sewer laterals may contain roof leader and parking lot discharge.

The Contractor must be prepared to maintain bypass flows for an extended period of time for 24/7 with continuous electrical service to pumps and a designated person, or persons, providing continuous monitoring of pumps and other items. The Contractor shall submit his/her final plan for maintaining existing sewage flows within the construction area to the Engineer for approval at least two (2) weeks before the start of construction.

2. Time for Commencement

The Contractor shall commence the work stipulated in the Contract Documents within ten (10) consecutive calendar days from the date of written notice to proceed as issued by the Engineer. No work is to be performed by the Contractor until such notification has been issued. Thereafter, the Contractor shall notify the Engineer in writing forty-eight (48) hours in advance of the date he/she intends to actually begin work.

3. Time for Completion

The Contractor shall fully complete the work stipulated in the Contract Documents within One Hundred and Eighty four (184) consecutive calendar days following the Notice to Proceed. The date for completion will be calculated from a date ten (10) days following the date of the Engineer's written notice to proceed.

4. Liquidated Damages

For each calendar day that any work remains uncompleted after the date specified for the completion of the work provided in the Contract, the amount of **one thousand dollars (\$1,000)** per calendar day will be deducted from any monies due the Contractor, not as a penalty, but as liquidated damages; provided, however, that due account shall be taken of any adjustment of the Contract time of completion of the work as provided for elsewhere in the specifications.

5. Project Coordination

Coordinate all activities with the Authority's Executive Director or his designated appointee.

6. Pre-Bid Meeting

A voluntary Pre-Bid Conference will be held at **TBD** at the GNHWPCA Headquarters, 260 East Street, New Haven, CT 06511. A trip to the project site will follow. Bidder attendance is highly recommended because of critical information concerning Contractor Notices, scheduling, etc.

7. Specialty Items

There are no "Specialty items" on this project

8. Water Pollution Abatement

Under no circumstances shall the Contractor allow sanitary sewage to be discharged into any storm sewer, river, brook, stream, creek, storm ditch, gutter, or the New Haven Harbor. A complete plan of the procedure for maintaining flow shall be submitted to the Engineer and other Local, State or Federal agencies, as required, for review and approval prior to commencing construction of sanitary sewers which require the maintenance of flow of sanitary sewage. Approval of this procedure shall in no way relieve the Contractor of his/her responsibilities for compliance with the specifications. In case of the failure of any component of the sewage system, the Contractor shall take immediate action to insure that sanitary sewage does not discharge into any storm sewer, river, brook, stream, creek, storm ditch, gutter, or the New Haven Harbor. These immediate actions shall include whatever labor (including overtime), material and equipment as may be required and all work shall be done at no cost to the Authority. Should the Contractor fail to respond immediately, the Authority may proceed with corrective work and deduct whatever costs including fines and/or penalties, are incurred from future payments to the Contractor.

9. Engineer's Field Office

The contractor is not required to provide Engineers field office for the project.

10. Coordination with Adjacent Construction Projects

The Contractor is made aware that the site has very limited access. Access to the adjacent ongoing construction activities listed below, must be maintained. The Contractor shall coordinate his work activities with those of adjacent Contractors and with City of New Haven operations. Ongoing construction activities include, but are not limited to:

- Regulator 025 Improvements
- Regulator 034 Closure

All costs associated with coordination shall be considered included in the various items in the bid.

A Contractor lay down area for 012 & 020 is not available on site. Contractor shall adjust his operations accordingly for an off-site lay down area.

11. Other Construction and Contractors

The Contractor's attention is called to the following:

Utility companies' crews will be working at the project site from time to time, as well as, other Contractors working in or near the project site. It shall be the Contractor's responsibility to coordinate and schedule his operations so as not to cause any conflicts between himself and the various utility companies and other Contractors.

The gas main along Quinnipiac Avenue is to be relocated by Southern Connecticut Gas Company (SCGCo), generally as identified on the plans. Contractor shall provide any necessary elevation and horizontal alignment information about their proposed method of construction to assist SCGCo.

Buckeye Pipeline will be monitoring construction activities along Quinnipiac Avenue, adjacent to their facilities. The Contractor will assist in providing Buckeye Pipeline with up to date schedules of proposed construction activities.

Contractor shall notify utilities of any conflicts and is responsible to coordinate resolution of conflicts including any necessary excavation, maintenance and protection of traffic and excavation restoration.

All costs incurred in coordinating and scheduling the various operations shall be included in the various Contract unit prices and no additional payment for this work will be allowed. Delays caused by the utility companies or other Contractors shall not be a basis for a claim for extra work.

12. Access to Site

The Contractor shall, at all reasonable times, allow access to the construction site and all public records for CT DEEP personnel, the Authority, the City and authorized agents. Refer to Section 22a 482-4(g)(10) for additional requirements.

13. Archaeological Finds

The Authority has no information, which would suggest that the project area is of any archaeological significance. Should the Authority or the Contractor discover, during the course of the project, evidence of any artifacts or remains or other items of archaeological significance, the Contractor shall immediately stop work and report these findings to the Authority, and shall secure these areas in an undisturbed condition. The Contractor shall allow for the recovery of said findings by the Authority or the CTDEEP. The Contractor shall not remove or disturb any artifacts under penalty of law, and shall prevent traffic from crossing over areas thought to contain archaeologically significant artifacts.

14. Construction Traffic, Scheduling, Access and Storage of Materials

The Contractor shall maintain and protect traffic in accordance with Item 971 "Maintenance and Protection of Traffic" of the Standard Specifications, except as may be modified elsewhere in the Contract Documents.

Project work hours shall be 7:00 AM through 7:00 PM, Monday through Friday, unless shown otherwise on the MP&T Plans or directed by the Engineer. Contractor's operations shall comply with the City of New Haven Noise Ordinance.

The hours listed herein are for general information only. Refer to the Maintenance and Protection of Traffic Plans for the actual work hours and limitations.

“Night Work” will be allowed only for “special conditions” when noted on the Contract Drawings and only when approved by the Authority, the City of New Haven and the Engineer in writing.

“Night Work” hours shall generally occur from Sunday through Wednesday evenings starting sometime between 7:00 PM and 10:00 PM and ending at 7:00 AM the following morning.

The Contractor shall note that the following days are holidays or special events that may require that no construction, or limited construction, operations be allowed. The Contractor shall anticipate that no construction operations will occur unless prior written authorization is obtained from the Engineer.

1. Yale University Commencement and Fall Move-in period.
2. New Haven Road Race
3. New Haven Festival of Arts and Ideas
4. Yale New Haven Closer to Free Ride
5. Thanksgiving Day and the Friday after
6. Christmas Eve and Christmas Day
7. New Year's Day

The Engineer may enforce a work or partial work, stoppage for other events when requested by the City or the Authority. Should other events and dates be added to the above list after the Contract is awarded, the Contractor shall be entitled to an extension in the Contract time, but will not be allowed any claim for additional compensation. The extension of time shall be reasonable and subject to mutual agreement between the Contractor and the Authority. In no case shall the time extension be greater than twice the actual days of work stoppage.

At no time shall work occur outside the designated Contract working hours on any portion of this project without prior written approval of the Authority, the City of New Haven or the Engineer. Allow at least 48 hours notice on any request.

All trenches/open cut areas must be either backfilled and paved or covered with steel plates and/or bridging and opened to pedestrian and vehicular traffic as indicated on the MP&T Plans at the end of each work period. A City permit and design review are required for any steel plates or bridging used in the City right-of-way. All areas must be clean of debris by the end of the permitted work period.

The Contractor is responsible for arranging for his/her staging and storage of materials, all of which is subject to approval of the Engineer. The Contractor should be aware that there is very limited amount of roadway storage and that he must adjust his operations for bringing some materials onto the project site only as needed. No materials shall be allowed to be stored overnight on the streets without prior approval of the Engineer. The Contractor shall be prepared to vacate areas where work is complete, or mainly complete, to allow street parking to be re-opened and to minimize disruption to adjacent residences and businesses.

15. Daily Paving

Unless otherwise directed by the Engineer, the Contractor shall place temporary bituminous pavement and/or sidewalk/driveway on a daily basis to maintain access.

16. Winter Construction

The project is anticipated to start in spring of 2018 and end in summer of 2018. See appendix B project schedule. Hence it is anticipated there will be no winter construction.

17. Project Photographs

The Contractor shall arrange to furnish the Authority with two (2) sets of photographs (min. 3" x 5" in size) and digital videotapes recorded on DVD showing the initial existing conditions of the areas to be disturbed by construction and progress photographs to be taken during the course of construction at times and locations designated by the Engineer.

The back of each compact disc and print shall be noted with the Project number, Contract number, date taken, location of camera and direction of view. The prints shall be mounted on acetate folders.

For this Contract, the Engineer may require up to 130 photographs of initial existing conditions and up to 20 progress photographs per month. Digital files of all photographs shall also be furnished to the Engineer and the GNHWPCA.

Contractor also shall submit a photo log inventory of existing pavement markings within the project limits to the City of New Haven Department of Transportation, Traffic and Parking with the required construction permit application. A copy of the bound photo log also shall be submitted to the Engineer.

All costs of furnishing these photos and acetate folders with photos labeled and mounted shall be considered included in the various prices bid for other work under this Contract.

18. Call Before-You-Dig

The Contractor's attention is called to the fact that they are obligated, by State Law, to notify the Public Utilities Control Authority (1-800-922-4455) at least two (2) full working days prior to beginning any digging or discharging of explosives. The "Call Before-You-Dig" system will assure that each utility company will have marked its lines in the field before any digging activity commences. The Contractor assumes all responsibilities for any damage to the various utility services and all liabilities arising there from. The following companies have public utility services within the City limits:

FRONTIER
P.O. Box 1562
4 Hamilton Street 90
New Haven, CT

South Central Connecticut
Regional Water Authority
90 Sargent Drive
New Haven, CT

Comcast Cable
630 Chapel St.
New Haven, CT

Southern Conn. Gas Co.
60 Marsh Hill Road
Orange, CT

United Illuminating Co.
180 Marsh Hill Road
Orange, CT

FRONTIER Fiber
Optics 75 Pent
Highway
Wallingford, CT

Buckeye Pipeline
50 Burbank road
Wethersfield, CT

City of New Haven
Public Works Department
34 Middletown Avenue
New Haven, CT

LIGHTOWER
Central Street
Boxborough, MA

19. Utility Relocation Costs

In order for the Contractor to perform the work under this Contract, it will be necessary for utility companies to relocate, reconstruct and/or reconnect their MAINLINE facilities and services. The work on MAINLINE facilities is different and distinct from the work described in Section 20 of the Special Specifications.

The Contractor is responsible for scheduling and coordinating the Project Traffic Management Plan with the utility relocation work by the various utility companies. In addition, the Contractor is responsible for the construction survey layout for all utilities within the Project.

All costs incurred in coordinating, laying out and scheduling the utility companies operations shall be included in the various Contract unit prices and no additional payment will be allowed to the Contractor.

The Contractor shall make the necessary arrangements with the respective utility companies and provide grades for the resetting and adjusting of public/private utility lines. This work shall not be considered as a basis of extending the time for completion. No additional cost shall be borne by the Authority for any required survey, coordination, delays, etc. incurred by the Contractor for this work.

The Contractor shall be responsible for locating and protecting all underground utilities throughout the project area in a manner acceptable to the utility companies. Prior to the start of construction, the Contractor shall submit to the Engineer for review and approval by the utility companies, plans for the support of all parallel or crossing utilities, utility structures and services, prepared by an Engineer licensed in the State of Connecticut. The Contractor shall coordinate this work with the respective utility companies. The Contractor shall be responsible for all costs associated with the support of utilities, including providing survey stakeout, if required, any charges by the utility companies for the cost of supporting their facilities, if the utility company elects to perform this work. The cost shall be included in the Contract unit prices bid for the various items of work. Also refer to the Notices to Contractor.

Any abandoned utilities that conflict with the work or must be removed to complete the work shall be removed by the Contractor. The ends of all remaining abandoned utilities shall be sealed as approved by the Engineer. The cost of this work shall be included in the various Contract unit prices and no additional payment will be allowed to the Contractor.

20. Existing Utility Service Laterals

a. General

The respective utility company shall be responsible for the relaying, reconnection or replacement of all existing gas and water service laterals, which are disrupted in the course of completing the work, or in conflict with new sanitary sewer at no cost to the Authority. The Contractor shall be responsible for coordinating the Project Traffic Management Plan with the work of the respective utility companies.

b. Gas Service Laterals

The Southern Connecticut Gas Company shall make all repairs, replacements and/or relocation of gas service laterals; however, the Contractor is responsible for reporting damage to the laterals or conflicts with the proposed work to the Gas Company and the Contractor will be charged by the Gas Company for the repair, relocation or replacement of services damaged by the contractor.

Should gas service to any building be disrupted, the Contractor shall work continuously with the gas company to restore service. Should the need for continuous work require working beyond the "authorized work hours", the Contractor is responsible for notifying the Authority and the City of New Haven of the need for the extension of work hours.

No additional payment will be allowed to the Contractor for repair, relocation or Replacement of gas service laterals damaged by the contractor and performed by the Gas Company and charged to the Contractor, or for Contract delays caused by the utility work.

c. Water Service Lateral

The South Central Connecticut Regional Water Authority shall make all repairs and/or replacements/relocations of existing water services that may be in conflict with the proposed work of this Contract. The Contractor must coordinate his/her proposed work with the water service lateral relocation and he/she must protect the relocated services.

Should the water or fire service to any building be disrupted, the Contractor shall immediately notify the Water Authority and work continuously to assist the Water Authority as required until the service is restored. This includes working beyond the normal workday, if required. If necessary, the Contractor shall provide temporary service as directed by the Engineer or the Water Authority.

No additional payment will be made to the Contractor for repair, replacement and/or relocation or reconnecting water service laterals damaged by the Contractor and charged to the Contractor by the Water Authority or for Contract delays caused by the utility work.

21. Existing Sidewalk, Driveway and Curbing Damage

Any existing sidewalk, driveway and/or curbing, which is removed or damaged due to any of the Contractor's operations and which is not scheduled to be replaced, as shown on the drawings, shall be replaced by the Contractor with sidewalk, driveway and/or curbing in kind and all costs involved in this work shall be the responsibility of the Contractor and no additional costs shall be incurred for this work by the Authority.

22. Existing Sanitary Sewers, Force Mains and Storm Sewers

The Contractor shall be responsible for maintaining and protecting all existing sanitary sewers, force mains and storm sewers encountered in the work under this Contract. Hand excavation and adequate bracing and shoring shall be employed where required to insure the structural integrity of said existing piping and structures to remain.

The Contractor shall save the Authority and Engineer harmless and shall be solely responsible for any liabilities or damages arising from his work near, under or through existing sanitary and storm sewer systems. The Contractor shall repair and replace, as required by the Engineer, any existing sanitary or storm sewer piping or structures damaged as a result of his work.

There will be no payment by the Authority for work covered in this section unless authorized in writing by the Engineer.

The Contractor shall schedule his operations so as to insure and maintain the uninterrupted flow in existing sewers at all times.

23. Removal of Existing Frames and Covers

All frames and covers that are to be removed to insert and remove CIPP liner or for other reasons, shall be handled carefully so that they may be reused. The Engineer shall direct whether they may be used on the job or whether they are to be delivered and stored neatly at various sites within the City, or disposed of by the Contractor. No additional payment shall be made to the Contractor for the storage and delivery of the salvaged items or for disposal. Additionally, any concrete pavement slab removed shall be repaired and/or replaced in kind. The cost of this work shall be included in other bid items.

24. Surplus and Rejected Excavated Material

All surplus suitable excavated material, not required for use within the project limits, shall remain the property of the Contractor. All such material shall be transferred off the project site by the Contractor as soon as possible and shall not be stored on the roadway. All costs involved in the removal, hauling and disposal of the suitable surplus excavated material and the temporary storage offsite for use on the Project shall be considered to be included in the various Contract unit prices and no separate payment will be made for any of this work.

All unsuitable excavated material and/or construction/demolition material shall become the Contractor's property and it shall be removed from the site immediately and disposed of by the Contractor in a legally acceptable manner. The costs involved in the removal, hauling and legal disposal of these materials shall be considered to be included in the various Contract unit prices. No separate payment will be made for any work involved in this section.

25. Dust Control

The Contractor shall be responsible for controlling dust from its operations and, when ordered by the Engineer, shall use whatever methods necessary for dust control in a manner satisfactory to the Engineer. All costs for dust control shall be included in Item 210 "Temporary Soil Erosion and Water Pollution Control."

26. Daily and Weekly Clean Up

The Contractor shall, at the end of each workday, keep the project area, haul routes, and other areas affected by the work clean and free from debris, excavation materials or any other items considered as trash. These items shall be disposed of daily in a legal manner at an approved dumpsite. No extra payment shall be made for any work involved in daily clean up, including hand sweeping.

At a minimum once a week, preferably on Fridays, and when directed by the Engineer, the Contractor shall employ the use of a mechanical street sweeper that uses water to minimize dust to sweep the streets within the project area and remove the dust, silt and other debris from the paved surfaces. The cost of the use of this street sweeping equipment, including the cost to store or rent it and the labor to operate it, shall be included in Item 210 "Temporary Soil Erosion and Water Pollution Control."

If any general construction debris is left behind by the Contractor, such as soda cans, juice bottles, paper products, banding materials, snippets of wire, etc., the Authority or City reserves the right to proportionately back charge the Contractor for any cleanup by outside or Authority/City services required. This back charge will be a non-negotiable item.

27. Signs

Any existing signs disturbed or removed by the Contractor, whether shown on the plans or not, shall be reset or replaced at the Contractor's expense as directed by the Engineer or by the New Haven Department of Transportation, Traffic and Parking (NHDTTP). Replacement signs shall be the v-lock system City Standard and include v-lock and sign posts per city standard. Any existing traffic control devices damaged due to the Contractor's negligence shall be replaced at his expense.

28. Road Improvements

The project scope does not involve dedicated road improvements. However, in agreement with the City, the Authority will ensure that all roadway trench repairs meet the City's permanent trench repair specifications. In addition, certain portions of designated streets may have to be milled to a depth of 2" minimum and overlaid to produce a new pavement surface. The contractor shall prepare an alternative bid for 2" milling and overlay as indicated in the "Itemized Proposal for construction Table." This work will be in areas as directed by the City and approved by the Authority.

29. Plugging/Abandoning/Supporting Existing Utilities

This project involves the plugging and abandonment-in-place of existing overflow pipes. The intent is to abandon as much piping in place as possible after filling the voids with low strength slurry (CLSM) and plugging.

The Contract Drawings show the minimum sections of pipe and the structures to be filled and abandoned, to be removed and where plugs should be installed.

The Contractor shall note that this work is paid separately. Refer to Special Technical Specification 1506 for additional information and for measurement and payment.

Within this project the Contractor may encounter abandoned pipe, conduits, ducts, or structures by private utility companies. These abandoned utility pipes, conduits, ducts, or structures shall be removed as necessary within the excavation required to perform the construction proposed on the

Drawings. The ends of the utilities to remain shall be plugged as required by the utility. There shall be no additional payment for the removal of these abandoned utilities within the excavated areas.

The Contractor may encounter existing utility lines or structures within excavated areas that require temporary support. The Contractor is responsible for supporting all existing utility system components shown on the Contract Drawings in order to perform the proposed work at no additional cost to the Authority.

30. Ongoing Site Improvements near 012-Regulator Manhole

There are ongoing site improvements in the private property in which regulator manhole 012 is located. At the time of design a retaining wall has been constructed. It is anticipated that a fence might be installed and other miscellaneous landscaping features may be added as well. The contractor shall restore all disturbed features within the private property "In Kind". No additional payment shall be made to the Contractor for removing and replacing disturbed landscaping features near 012 regulator manhole location. The cost of this work shall be included in other bid items.

31. Sequence of Construction Outline

The following construction sequence is very preliminary and is intended as a general guide to the Contractor. It also is intended to convey a timeline that is critical to the Authority. This timeline stresses the need for scheduling simultaneous work in different areas of the Project and the use of multiple work crews to ensure the proposed work is completed within the allotted Contract Time and with minimal disruption. The Contractor shall use the following suggested sequence to prepare his own Project Schedule that will be submitted for review prior to the start of construction.

Also, please refer to the Maintenance and Protection of Traffic drawings that show the recommended minimum traffic control that will be required in those areas of the Project when the construction noted below is ongoing.

A suggested schedule is included in Appendix B for the Contractor to use as a guideline in the preparation of the Project Schedule. The schedule generally conforms to the below construction sequence.

Closing Regulator 020

1. Establish Maintenance and Protection of Traffic plan and Environmental controls
2. CCTV and Light Clean pipe reaches to be lined.
3. Coordinate with SCGCo. to relocate 8" Gas Main
4. Establish by pass pumping
5. Construct new sewer and manhole
6. CIPP line sewer reaches and restore service connections.
7. Rehabilitate Manholes
8. Close Regulator 020
9. CCTV pipes after lining
10. Remove bypass pumping and restore pavement, sidewalks and other appurtenances disturbed by construction to the satisfaction of the City
11. Remove traffic control signs and devices installed in item 1 above; repaint pavement markings as required by the City.

Closing Regulator 012

1. Establish Maintenance and Protection of Traffic plan and Environmental controls
2. Light Clean and CCTV pipe reaches to be lined.
3. By-pass line and pump set-up
4. CIPP line sewer reaches
5. Rehabilitate Manholes
6. Close Regulator 012
7. CCTV pipes after lining.
8. Remove bypass pumping and restore pavement, sidewalks and other appurtenances disturbed by construction to the satisfaction of the City
9. Remove traffic control signs and devices installed in item 1 above; repaint pavement markings as required by the City.

32. Construction Safety

The Contractor is cautioned to take special notice of the close proximity of overhead wires throughout the project area.

The Contractor shall have the sole responsibility for complying with all State and Federal safety regulations including OSHA requirements and the requirements of the utility companies and take whatever measures are necessary for the protection of workers and the general public. All workers must have the appropriate OSHA training. All construction field personnel utilized at the project site must have a current OSHA Certification. This certification must be submitted to the Authority and Engineer prior to construction.

Trench safety is the sole responsibility of the Contractor. There shall be no obligation on the part of the Engineer to issue orders for sheeting, stay bracing or sheeting left-in-place and/or to pass upon sufficiency and adequacy of sheeting; nor shall the failure on the part of the Engineer to give such orders relieve the Contractor from liability for damages occasioned by negligence, or otherwise growing out of the Contractor's failure to either install sufficient and adequate sheeting and/or stay bracing or to leave in place in the excavation sufficient and adequate support in event the caving in or moving of the ground adjacent to the sides of the excavation during and after the backfilling operation. All temporary or permanent excavation support system/sheeting shall be designed by a Professional Engineer licensed in the State of Connecticut.

The Contractor shall have the sole responsibility for maintaining the safety of the public, both pedestrian and vehicular, in all activities related to the work, for the duration of the Construction Contract. The Contractor shall make every effort to ensure the public is safe and protected during the construction period.

The Contractor shall prepare and maintain on-site a Construction Health and Safety Plan to be followed during the entire Contract period. The Plan shall detail the procedures for monitoring the construction operations and the safety of the public. The Plan shall include forms to be filled out and signed by the Contractor's Safety Officer.

33. Bid Items

Not all payment items in the Technical Specifications have corresponding Bid Items. These Technical

Specifications are meant to define the work, which will be paid for under the appropriate Bid Items as listed in the Itemized Proposal. Only the Bid Items listed in the Itemized Proposal will be paid for.

34. List of Drawings

The following list contains the Contract Drawings for this project:

SHEET NO.	TITLE
1	COVER SHEET
2	INDEX OF DRAWINGS
3	NOTES , LEGENDS & ABBREVIATIONS & KEY-MAPS
4	REGULATOR 020 - CIPP LINING AND MANHOLE REHABILITATION STA 0+00 TO 3+50
5	REGULATOR 020 - CIPP LINING AND MANHOLE REHABILITATION STA 3+50 TO 9+50
6	REGULATOR 020 - CIPP LINING AND MANHOLE REHABILITATION STA 9+50 TO 15+00
7	REGULATOR 020 - CIPP LINING AND MANHOLE REHABILITATION STA 15+00 TO 20+50
8	REGULATOR 020 - CIPP LINING AND MANHOLE REHABILITATION STA 20+50 TO 25+50
9	REGULATOR 012 - CIPP LINING AND MANHOLE REHABILITATION STA 0+00 TO 3+00
10	REGULATOR 012 - CIPP LINING AND MANHOLE REHABILITATION STA 3+00 TO 8+50
11	REGULATOR 012 - CIPP LINING AND MANHOLE REHABILITATION STA 8+50 TO 9+65
12	GNHWPCA STANDARD DETAILS SHEET 1 OF 2
13	GNHWPCA STANDARD DETAILS SHEET 2 OF 2
14	CITY OF NEW HAVEN STANDARD DETAILS 1 OF 3
15	CITY OF NEW HAVEN STANDARD DETAILS 2 OF 3
16	CITY OF NEW HAVEN STANDARD DETAILS 3 OF 3
17	MISCELLANEOUS STANDARD DETAILS 1 OF 2
18	MISCELLANEOUS STANDARD DETAILS 2 OF 2
19	MAINTENANCE AND PROTECTION OF TRAFFIC GENERAL NOTES & SIGN LEGEND
20	MAINTENANCE AND PROTECTION OF TRAFFIC – NICOLL ST, CANNET ST & MITCHELL DR
21	MAINTENANCE AND PROTECTION OF TRAFFIC - QUINNIPIAC AVE -1
22	MAINTENANCE AND PROTECTION OF TRAFFIC - QUINNIPIAC AVE -2
23	MAINTENANCE AND PROTECTION OF TRAFFIC - QUINNIPIAC AVE -3
24	CONSTRUCTION SIGN SUPPORTS AND CHANNELIZING DEVICES
25	MAINTENANCE AND PROTECTION OF TRAFFIC DETAILS

35. Bidder's Checklist

At a minimum, each Bidder shall ensure that their completed bid proposal includes the following documents:

- Bid Proposal
- Bid Security/Bond
- Bidder's Qualifications Form
- MBE/WBE: See Section 40 below (Clean Water Fund Memorandum Dated May 25, 2016)
- DAS Pre-qualification Certification: See Section 36 below (DAS Update Bid Statement)
- American Iron and Steel Provision - Bidder Certification Form

36. Pre-Qualifications

To the extent applicable, all Bidders must hold a current State of Connecticut Department of Administrative Services pre-qualification certificate as required by the DAS Contractor Prequalification Program (See Connecticut General Statutes §4a-100) and shall submit a current certificate and DAS contractor pre-qualification update statement at the time of bid. However, DAS pre-qualification does not preclude the right of the Authority to independently evaluate and make determinations regarding the responsibility of the bidders. At a minimum, each Bidder shall be pre-qualified in the following classifications:

- Concrete
- Masonry
- Sewer and Water Lines
- Sitework
- Landscaping
-

37. Clean Water Fund

The State of Connecticut Department of Energy and Environmental Protection participates financially in this project and the project has been designated as a Clean Water Fund Contract. The Contractor shall conform in all respects in accordance with the true intent and meaning of each and all the requirements contained in the "Required Construction Contract Provisions Under the Connecticut Department of Energy and Environmental Protection's Clean Water Fund," a copy of which will be incorporated in each Proposal for Contract so classified. When any of such Clean Water Fund Provisions are in conflict with any other provisions of the Contract Documents, the Clean Water Fund Provisions shall prevail and take precedence.

The Contractor shall comply with Executive Order No. Three and Executive Order No. Seventeen included in the DEEP Contract Provisions.

38. DEEP Project Sign

The Contractor shall furnish, install, remove and dispose of a project sign, in accordance with State of Connecticut Department of Energy and Environmental Protection requirements. Provide a shop drawing for review and approval. All materials utilized shall be environmentally safe and be proven effective for the intended use. A copy of the DEEP sign is provided in the Specifications.

The sign shall be a basic non-illuminated site-sign panel and consist of one 4'-0" x 8'-0" X 3/4" single face MDO sheet (sign maker quality), face and back shall be primer painted with chromatic blackout white bulletin paint. Sign shall incorporate DEEP logo. The letter message shall be painted on the surface. The border frame shall be made from 2" x4" pressure treated wood with a routed edge to allow inset and fastening of finished sign panel. Cost numbers and other information will be provided to the Contractor after award of Contract. The Contractor shall provide adequate support for the sign as required by the site conditions. The sign shall be located at a proper distance above prevailing grade to permit public viewing but shall not be located to create a hazardous site distance driving condition. There will be no separate payment for this work.

39. DEEP Construction Contract Provisions

The Contractor is advised that the word "Municipality" in the "DEEP Construction Contract Provisions" included herein refers to the "Greater New Haven Water Pollution Control Authority" (GNHWPCA), a regional entity.

40. Clean Water Fund Memorandum (Revised MBE/WBE May 25, 2016)

Memorandum is included herein.

41. Insurance Requirements

See Item 107-06 under "Modifications to the GNHWPCA specifications 101 thru 109."

42. Requests for Clarification of Bid Documents

Requests for Clarifications during the Bid Period must be received a **minimum of 10 calendar days prior to the bid date**, submit via email to engineering@GNHWPCA.com and james.sullivan@aecom.com. Addenda to the Bid will be issued via facsimile and/or electronically a minimum of 5 calendar days prior to the original or revised bid date. **For proper notification of addenda, at the time of picking up the bid package, prospective bidders must provide in full all necessary information requested.**

43. Basis of Award

See Item 103-01 on page 56 of Standard Specifications and Modifications to the GNHWPCA specifications 101 thru 109.

44. Payment Provisions

See Item 109, "Measurement and Payment", page 88 of the Standard Specifications for payment provisions.

45. Addenda

- a. See Section 102-07, page 12, of the Standard Specifications for matters related to the issuance of Addenda.
- b. See Item 42 above in this Section 102-16, regarding requests for clarifications.
- c. The Contractor is required to acknowledge receipt of Addenda in the space provided in the Itemized Proposal.

46. Safety and Health Regulations

This Project is subject to the Safety and Health Regulations (CFR29, 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.

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).

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.

47. Davis-Bacon Act

The Contractor shall comply with wage and reporting requirements specified in the Davis-Bacon Act. All monthly pay requests for funding shall contain a certification from the Principal or Prime Contractor, which states, at a minimum, the following:

1. The project name, location, contract number and pay period;
2. That all of the U.S. Department of Labor Davis-Bacon Act requirements have been complied with by the undersigned as Principal Contractor, and by each subcontractor employing mechanics or laborers at the site of work;
3. That I, the undersigned, payor supervise the payment of the persons employed by (insert the name of the construction company), Principal Contractor;
4. That the payroll for the payroll period contains the information required to be provided under Sec. 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under Sec. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
5. That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract, or each Subcontract, during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 5;
6. That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract; and
7. The undersigned acknowledges that the falsification of any of the above certifications may subject the undersigned to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

It shall be the responsibility of the Bidder, before the Bid Opening, to obtain any additional information on Federal Wage Rate requirements relating to the Davis-Bacon Act.

48. State Wage Rates

Since this project falls under the Davis-Bacon Act, the higher of Connecticut State and Federal Wage Rates apply. It shall be the responsibility of the Bidder, before Bid Opening, to obtain any additional information on Wage Rates for those trades people who are not covered by the applicable Wage Decisions Package, but who may be employed for the proposed work under this Contract. All construction associated with this Contract will be governed by Heavy and Highway Rates.

49. Connecticut DEEP Required Contract Provisions

50. Contractor's Exempt Purchase Certificate

51. Executive Order No. Three

52. Executive Order No. Seventeen

53. MBE/WBE Memorandum, May 25, 2016

54. Connecticut DEEP Project Sign Detail

55. American Iron and Steel (AIS) Requirements

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Connecticut DEEP Required Contract Provisions

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Agency

Department of Environmental Protection

Subject

Clean Water Fund

Inclusive Sections

§§ 22a-482-1—22a-482-4

CONTENTS

Sec. 22a-482-1.	Introduction and priority management system
Sec. 22a-482-2.	Requirements for funding project agreements
Sec. 22a-482-3.	Technical program elements
Sec. 22a-482-4.	Administrative program elements

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Clean Water Fund

Sec. 22a-482-1. Introduction and priority management system

(a) **Definitions** as used in Sections 22a-482-1 to 22a-482-4 inclusive,

(1) “Act” means the Federal Clean Water Act (33 U.S.C. 1251 et seq., as amended).

(2) “Ad valorem tax” means a tax based upon the assessed value of real property.

(3) “Applicant” means a municipality as defined in section 22a-475 of the General Statutes.

(4) “Architectural or engineering services” means consultation, investigations, reporting and design services offered within the scope of the practice of architecture or professional engineering as defined by the laws of the State of Connecticut.

(5) “Building” means the erection, acquisition, alteration, remodeling, improvement or extension of pollution abatement facilities.

(6) “Cash flow projection” means a schedule of expenditures to municipal prime contracts throughout the life of the project.

(7) “Clean Water Fund” means the fund created under sections 22a-475 to 22a-483 inclusive of the General Statutes.

(8) “Collector sewer” means the common lateral sewers, within a publicly owned sewer system, which are primarily installed to receive wastewaters directly from facilities which convey wastewaters from individual systems, or from private property, and which include service “Y” connections designed for connection with those facilities including:

(A) crossover sewers connecting more than one property on one side of a major street, road, or highway to a lateral sewer on the other side when they are more cost-effective than parallel sewers; and

(B) pumping units and pressurized lines serving individual structures or groups of structures when such units are more cost-effective and are owned and maintained by the municipality.

This definition excludes other facilities which convey wastewater from individual structures or from private property to the public lateral sewer or its equivalent and also excludes facilities associated with alternatives to conventional pollution abatement facilities in small communities.

(9) “Combined sewer” means a sewer that is designed as a sanitary sewer and a storm sewer.

(10) “Compatible industrial wastewater” means wastewater that is produced by an industrial user, has a pollutant strength and other characteristics similar to those of domestic wastewater, and can be efficiently and effectively transported and treated with domestic wastewater.

(11) “Complete waste treatment system” means a system that consists of all the pollution abatement facilities necessary to meet the requirements of Title III of the Act, involving the transport of wastewater from individual homes or buildings to a plant or facility where treatment of the wastewater is accomplished; the treatment of the wastewater to remove pollutants; and the ultimate disposal, including recycling or reuse, of the treated wastewater

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-1

Department of Environmental Protection

and residues which result from the treatment process.

(12) “Construction” means the erection, building, acquisition, alteration, remodeling, improvement or extension of pollution abatement facilities; or, the inspection and supervision of any of the foregoing items.

(13) “Cost Analysis” means the review and evaluation of each element of subagreement cost to determine reasonableness, allocability and allowability.

(14) “Design” means studies, surveys, plans, working drawings, specifications, procedures and field testing of innovative and alternative wastewater treatment processes and techniques (excluding operation and maintenance) requisite for the construction of pollution abatement facilities.

(15) “Excessive infiltration/inflow” means the quantity of infiltration/inflow which can be economically eliminated from a sewer system as determined in a cost-effectiveness analysis that compares the costs for correcting the infiltration/inflow conditions to the total costs for transportation and treatment of the infiltration/inflow.

(16) “Grantee” means a municipality as defined in section 22a-475 of the General Statutes.

(17) “Individual systems” means privately owned alternative pollution abatement facilities (including dual waterless/gray water systems) serving one or more principal residences or small commercial establishments. Normally these are onsite systems with localized treatment and disposal of wastewater, but may include systems serving a cluster of principal residences or small commercial establishments.

(18) “Infiltration” means water other than wastewater that enters a sewer system (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow.

(19) “Inflow” means water other than wastewater that enters a sewer system (including sewer service connections) from sources such as, but not limited to: roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters, or drainage. Inflow does not include, and is distinguished from, infiltration.

(20) “Initiation of operation” means the date specified by the municipality on which use of the project begins for the purpose that it was planned, designed and built.

(21) “Interceptor sewer” means a sewer which is designed for one or more of the following purposes:

(A) to intercept wastewater from collector sewers and convey such wastes directly to a treatment facility or another interceptor;

(B) to replace an existing pollution abatement facility and transport the waste to an adjoining collector sewer or interceptor sewer for conveyance to a treatment plant;

(C) to transport wastewater from one or more municipal collector sewers to another municipality or to a regional plant for treatment; or

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-1

(D) to intercept an existing discharge of raw or inadequately treated wastewater for transport directly to another interceptor or to a pollution abatement facility.

(22) "Municipality" is as defined in section 22a-475 of the General Statutes.

(23) "Nonexcessive infiltration" means the quantity of wastewater flow which cannot be economically and effectively eliminated from a sewer system as determined in a cost-effectiveness analysis.

(24) "Nonexcessive inflow" means the rainfall induced peak inflow rate which does not result in chronic operational problems related to hydraulic overloading of the pollution abatement facility during storm events. These problems may include surcharging, backups, bypasses, and overflows.

(25) "Operation and maintenance" means activities required to assure the dependable and economical functioning of pollution abatement facilities.

(A) Maintenance: preservation of functional integrity and efficiency of equipment and structures. This includes preventive maintenance, corrective maintenance and replacement of equipment as needed during the useful life of the facility.

(B) Operation: control of the unit processes and equipment which make up the pollution abatement facility. This includes financial and personnel management, records, laboratory control, process control, safety and emergency operation planning.

(26) "Pollution abatement facility" is as defined in section 22a-475 of the General Statutes and is synonymous with the terms project, treatment works, treatment system, and treatment facility.

(27) "Pollution abatement facility phase or segment" means any portion of a complete pollution abatement facility described in an approved engineering report which can be identified as a contract or discrete sub-item or subcontract. Completion of the building of a pollution abatement facility phase or segment may, but need not in and of itself, result in an operable pollution abatement facility.

(28) "Planning" means all necessary engineering reports and studies to determine the feasibility of pollution abatement facilities including pertinent engineering, architectural, legal, fiscal and economic investigations prior to design.

(29) "Project performance standards" means the performance and operational requirements applicable to a project including the enforceable requirements of the Act and the specifications which the project is planned and designed to meet.

(30) "Price analysis" means the process of evaluating a prospective price without regard to the contractor's separate cost elements and proposed profit. Price analysis determines the reasonableness of the proposed subagreement price based on adequate price competition, previous experience with similar work, established catalog or market price, law, or regulation.

(31) "Principal residence" means the habitation of a family or household for at least 51 percent of the year. Second homes, vacation or recreation residences are not included in this definition.

(32) "Profit" means the net proceeds obtained by deducting all allowable costs (direct

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-1

Department of Environmental Protection

and indirect) from the price.

(33) “Project schedule” means a timetable specifying the dates of key project events including public notices of proposed procurement actions, subagreement awards, issuance of a notice to proceed with the building and key milestones in the building, initiation of operation and completion of the project.

(34) “Replacement” means expenditures for obtaining and installing equipment, accessories, or appurtenances which are necessary during the useful life of the pollution abatement facility to maintain the capacity and performance for which such works were designed and constructed. The term “operation and maintenance” includes replacement.

(35) “Sanitary sewer” means a conduit intended to carry liquid and water carried wastes from residences, commercial buildings, industrial plants and institutions together with minor quantities of ground, storm and surface waters that are not admitted intentionally.

(36) “Services” means a contractor’s labor, time or efforts which do not involve the delivery of a specific end item, other than documents which may result from the contractor’s labor, time or efforts (e.g., reports, design drawings, specifications). This term does not include employment agreements or collective bargaining agreements.

(37) “Small commercial establishments” means private commercial establishments such as restaurants, hotels, stores, filling stations or recreational facilities; or private, non-profit entities such as: churches, schools, hospitals, or charitable organizations having dry weather wastewater flows of less than 25,000 gallons per day.

(38) “Small community” means any municipality with a population of 5,000 or less or highly dispersed sections of large municipalities, as determined by the Commissioner.

(39) “Storm sewer” means a sewer designed to carry only storm waters, surface runoff, street wash waters and drainage.

(40) “Subagreement” means a written agreement between a grant recipient and another party (other than another public agency) and any lower tier agreement for services, supplies, equipment, or construction necessary to complete the project. Subagreements include contracts and subcontracts for personal and professional services, agreements with consultants and purchase orders.

(41) “Useful life” means the period during which a pollution abatement facility will be operated.

(42) “User charge” means a charge levied on users of a pollution abatement facility, or that portion of the ad valorem taxes paid by a user, for the user’s proportionate share of the cost of operation and maintenance (including replacement) of such facility.

(43) “Value engineering” (VE) means a specialized cost control technique which uses a systematic and creative approach to identify and to focus on unnecessarily high costs in a project in order to arrive at cost savings without sacrificing the reliability or efficiency of the project.

(b) Development and Format of Project Priority List.

(1) The Commissioner shall make funding assistance available for projects on a state priority list as established under this section for such periods as are authorized by the

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-1

Legislature under Chapter 446k of the General Statutes.

(2) The Commissioner shall prepare an ordered priority listing of projects for which state funding assistance shall be made available for the period effective July 1st to the following June 30th corresponding to the state fiscal year.

(3) The priority list shall contain two portions: (A) a fundable portion consisting of those highest priority projects ready for construction and anticipated to be funded within the current state fiscal year; and (B) a future portion consisting of those projects that may be funded from future authorized allotments.

(c) State Priority System and Project Priority List.

(1) Priority Rating Criteria. All projects eligible for funding assistance shall be evaluated and assigned a priority rating in accordance with the criteria set forth below and will appear on the project priority list. The Commissioner may determine that large-scale, multi-phase projects be segregated and rated separately. Each project shall be evaluated and given points as applicable for each of the following rating criteria, the sum of which shall determine its priority number. These criteria are consistent with the rating system used to establish federal funding priorities and are shown in the following table:

PRIORITY RATING POINT SYSTEM

I. Benefit of project upon adversely impacted potable water supplies. (10 points maximum)

- A. Impaired water supply affecting less than 25 people—2 points.
- B. Impaired water supply affecting 26 to 100 people—4 points.
- C. Impaired water supply affecting 101 to 1,000 people—6 points.
- D. Impaired water supply affecting 1001 to 5,000 people—8 points.
- E. Impaired water supply affecting more than 5,000 people—10 points.

II. Benefit of project toward attainment of designated water quality standards and goals. (28 points maximum)

A. Project is necessary for attainment of water quality standards where the impacted water resource is:

- 1. Smaller than main stem of a sub-regional drainage basin or groundwater goals will be attained—5 points.
- 2. Main stem of sub-regional drainage basin—10 points.
- 3. Main stem of regional drainage basin—15 points.
- 4. Main stem of major drainage basin—20 points.

B. Project will impact coastal areas (considered the equivalent of a regional drainage basin)—15 points.

For the purposes of the Priority Rating Point System, the drainage basin designations are defined on the map entitled “Natural Drainage Basins in Connecticut: 1981” prepared by the Natural Resources Center of the Department of Environmental Protection in cooperation with the United States Geological Survey.

C. Project will enable impacted waters to meet minimum dissolved oxygen standards—8 points.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-1

Department of Environmental Protection

- III. Project will enhance specific water resource values. (24 points maximum)
- A. Fishery resources—(6 points maximum).
 - 1. Project will improve recreational fisheries—3 points.
 - 2. Project will improve anadromous fisheries—6 points.
 - 3. Project will open new streams for fish stocking programs—6 points.
 - B. Shellfish resources—(6 points maximum).
 - 1. Project will lower coliform bacteria levels in the waters of shellfish beds—3 points.
 - 2. Project will open new areas for shellfishing—6 points.
 - C. Swimming—(6 points maximum).
 - 1. Project will enhance existing swimming opportunities—3 points.
 - 2. Project will allow for new swimming opportunities—6 points.
 - D. Eutrophication—(6 points maximum).
 - 1. Project will reduce eutrophication of a lake or impoundment by diverting septic system discharges out of a drainage basin—3 points.
 - 2. Project will reduce eutrophication of a lake or impoundment by providing nutrient removal in a municipal treatment plant or by relocating an existing treatment plant discharge—6 points.
- IV. Population equivalent (including commercial and industrial waste) initially served by the project. (12 points maximum)
- A. Less than 5000—2 points.
 - B. 5,000 but less than 10,000—4 points.
 - C. 10,000 but less than 20,000—6 points.
 - D. 20,000 but less than 40,000—8 points.
 - E. 40,000 but less than 75,000—10 points.
 - F. 75,000 or greater—12 points.
 - V. Health and Sanitation impacts. (6 points)
Project will eliminate ponding of sewage from failing septic systems, backup of sewage into basements, or overflow of sewage in streets (combined sewer overflow correction projects are not eligible for points).
- VI. Miscellaneous. (20 points maximum)
- A. Project involves the upgrading of an existing primary facility in order to comply with secondary treatment standards—5 points.
 - B. Project that will result in Commissioner rescinding an Order concerning a sewer connection moratorium—5 points.
 - C. Project will eliminate nuisance odors associated with treatment processes or pump stations but exclusive of large-scale expansion or upgrading of pollution abatement facilities—5 points.
 - D. Remedial action will improve treatment plant operations where treatment standards are already being achieved—5 points.
- VII. Connecticut Housing Partnership Program—Development Designation Community has received development designation—3 points.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-1

Note: In cases where the priority rating or score is the same for two or more projects, the order is determined by the highest score assigned cumulatively in criteria II (total), III (total), and IV. If a tie still remains, preference will be given to those projects ready to proceed at the earliest date within the limit of funds available.

(2) Project Ranking Mechanism. The relative position or rank of a project on the priority list for funding will be determined by its priority number and its readiness to proceed to construction during the funding year under consideration. The Commissioner may choose to assign a higher rank for projects which fall into one of the following categories:

(A) Category I—Consists of projects for which a construction application was submitted for review during the previous funding period and which were on the fundable portion of that year's priority list. These applications have undergone preliminary review, are essentially complete and represent the good faith efforts of municipalities to comply with grant program requirements. Only those projects from the fundable portion of the previous year's priority list can be placed in this category;

(B) Category II—Consists of phased projects where previous phases were funded by the Clean Water Fund: Phased funding takes into account local disruption created by construction activities and the ability of the Clean Water Fund to finance the entire project in one fiscal year. The state has a strong commitment to a phased project once it is initiated.

(C) Category III—Consists of projects which remedy documented pollution of potable water supplies. In order to qualify for high ranking for funding within this special category, projects must meet the following basic criteria: (i) the scope of the pollution problem is significant; (ii) the affected water supply is not potable, i.e. does not meet minimum drinking water standards and requires treatment beyond chlorination; and (iii) pollution abatement facilities are the cost-effective solution to the problem. This category does not apply to potential emergency use of class B waters for potable water supply as defined in the Connecticut Water Quality Standards adopted pursuant to section 22a-426 of the General Statutes.

(3) Order of Funding Priority. The Commissioner shall distribute funds subject to the requirements for public hearing set forth in this section. It is the goal to establish a balance between planning, design and construction. Therefore, all needs within the highest funding designation need not be fulfilled before proceeding to the next highest funding designation. The following categories establish the general order in which assistance is made:

(A) funds to finance temporary loans for planning and design pursuant to section 22a-478 (e) of the General Statutes necessary for planning and design for sewage facility projects;

(B) a reserve of funds to finance unanticipated cost increases for projects previously funded;

(C) a reserve of funds sufficient to finance at least one small community project;

(D) additional set asides which the Commissioner may establish if he or she determines that serious health or water quality problems caused by wastewater facilities are in the public interest to correct, but will not receive sufficient-priority to correct in a time frame he or

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-2

Department of Environmental Protection

she considers reasonable; and

(E) funds available for construction.

(4) **Annual Public Hearing.** The amount of funds applied to each category described in subdivision (3) of this subsection shall be determined annually by the Commissioner based upon available funds and shall be designated in a draft priority list. The draft priority list will indicate which specific projects are proposed to receive funding within each funding designation for the upcoming fiscal year and shall be made available to appropriate local officials at least thirty (30) days prior to a specified date for public hearing. The Commissioner will consider all written and oral testimony presented at the hearing and may elect to modify the draft priority list on the basis of such testimony. The Commissioner shall also indicate his or her reasons for accepting or rejecting any suggested revisions as part of the hearing record. Following notice of any changes to the priority list which may result from the hearing, the priority list shall be deemed final except for minor revisions allowable under subdivision (5) of this section.

(5) **Revisions to the Priority List.**

(A) The priority system shall include a project bypass procedure. The Commissioner may bypass a project on the fundable portion of the priority list if he or she determines that the bypassed project will not be ready to proceed within the first six months of the funding year. The Commissioner shall advise, in writing, each municipality he or she intends to bypass and the reasons therefore. Projects that are bypassed will retain their relative priority rating for consideration in future years. Projects bypassed will be replaced by the next highest ranking project ready to proceed. Projects will be removed from the priority list the following year after they receive funding.

(B) Revisions to the priority list may be made at any time during the funding period. If the Commissioner determines the change to be significant, a public hearing with appropriate notice will be held and all affected by such a change will be notified directly.

(Effective March 5, 1993)

Sec. 22a-482-2. Requirements for funding project agreements

(a) **Types of Projects.** The Commissioner is authorized to award assistance for the following types of projects:

- (1) Planning: the preparation of engineering reports;
- (2) Design: the preparation of contract plans and specifications; and
- (3) Construction: the building of pollution abatement facilities and sewers.

(b) **Level of State Assistance.** The amount of state funding assistance shall be based on the Commissioner's determination of eligibility and the provisions of sections 22a-475 to 22a-483, inclusive, of the General Statutes.

(c) **Applications for Funding Assistance.** A municipality applying for funding assistance shall file properly executed forms and applications prescribed by the Commissioner. In addition, the following supporting documentation shall be submitted as appropriate:

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-2

- (1) An Application for Engineering Report Funding Assistance which shall include:
- (A) a Plan of Study including:
 - (i) the proposed planning area;
 - (ii) an identification of the entity or entities that will be conducting the planning;
 - (iii) the nature and scope of the proposed planning project and public participation program, including a schedule for the completion of specific tasks; and
 - (iv) an itemized description of the estimated engineering report costs;
 - (B) proposed subagreements, or an explanation of the intended method of awarding subagreements, for performance of any substantial portion of the project;
 - (C) a resolution adopted by the municipality's Water Pollution Control Authority authorizing a specific person to file the application and execute the agreement. The resolution shall be certified and sealed by the Town/City Clerk; and
 - (D) a cash flow projection.
- (2) An Application for Design Funding Assistance which shall include:
- (A) an engineering report meeting all the requirements set forth in section 22a-482-3 (a) of the Regulations of Connecticut State Agencies;
 - (B) proposed subagreements, or an explanation of the intended method of awarding subagreements, for performance of any substantial portion of the project;
 - (C) a resolution adopted by the municipality's Water Pollution Control Authority authorizing a specific person to file the application and execute the agreement. The resolution must be certified and sealed by the Town or City Clerk;
 - (D) a value engineering (VE) commitment in compliance with section 22a-482-3 (d) of the Regulations of Connecticut State Agencies for all design funding assistance applications for projects with a projected total building cost of \$10 million or more, including the cost for interceptor and collector sewers. For those projects requiring VE, the municipality may propose, subject to the Commissioner's approval, to exclude interceptor and collector sewers from the scope of the VE analysis;
 - (E) proposed or executed (as determined appropriate by the Commissioner) inter-municipal agreements necessary for the construction and operation of the proposed pollution abatement facility for any facility serving two or more municipalities;
 - (F) a schedule for initiation and completion of the project work;
 - (G) evidence that local authority to construct the facilities has been obtained; and
 - (H) a cash flow projection.
- (3) An Application for Construction Assistance which shall include:
- (A) all requirements for design funding assistance as specified in subdivision (c) (2) of this section;
 - (B) a final legal opinion stating that the acquisition of all sites, easements or rights-of-way necessary to assure undisturbed construction and operation and maintenance of the proposed project have been acquired. The cost of any real property eligible for funding assistance must reflect fair market value as determined by standard recognized appraisal methods;

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-2

Department of Environmental Protection

(C) two copies of contract plans and specifications for the review and approval of the Commissioner;

(D) a schedule for submission of a proper operation and maintenance program including a preliminary plan of operation;

(E) an approved user charge system developed in accordance with the requirements set forth in section 22a-482-3 (e) of the Regulations of Connecticut State Agencies;

(F) a cash flow projection; and

(G) amounts and terms of any other financial assistance.

(d) **Terms of Funding Assistance.**

(1) No financial assistance shall be made for a pollution abatement facility that would provide capacity for new connections or other developments to be located in environmentally sensitive land such as wetlands, floodplains, prime agricultural lands, or regulated coastal zones. Appropriate and effective funding conditions (e.g. restricting sewer hook-ups) should be used where necessary to protect these resources from new development.

(2) The prime purpose in the award of construction assistance is to solve existing pollution problems and not intended to assist in new development.

(3) For engineering reports and design no financial assistance will be allowed for any engineering work performed before award without the prior written approval of the Commissioner.

(4) Except as otherwise provided in this subsection, no assistance for construction may be awarded for any construction which is initiated prior to the date of award. Preliminary construction work, such as advance acquisition of major equipment items requiring long lead times, acquisition of an option for the purchase of eligible land, or advance construction of minor portions of a pollution abatement facility, including associated engineering costs, in emergencies or instances where delay could result in significant cost increases, may be approved by the Commissioner after the completion of an environmental review, but only if the municipality submits a written and adequately substantiated request.

(5) The approval of a plan of study, an engineering report, plans and specifications, advance acquisition of equipment or advance construction will not constitute a commitment or approval of assistance for a subsequent phase of the project. In instances where such approval is obtained, the applicant proceeds at its own risk, since payment for such costs cannot be made unless assistance for the project is awarded.

(6) The municipality shall notify the Commissioner that it has complied or will comply with the applicable procurement provisions of subsections (f), (g) and (h) of 22a-482-4 of the Regulations of Connecticut State Agencies before the award of any assistance.

(7) Within ninety (90) days after receipt of a completed application (excluding suspension periods for submission of supplemental information), the Commissioner will take one of the following actions: (A) approve for award; (B) defer due to lack of funding; or (C) disapprove the application. The applicant shall be promptly notified, in writing, of any deferral or disapproval. A deferral or disapproval of an application shall not preclude

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-2

its reconsideration or a reapplication.

(8) The Commissioner will transmit the funding agreement to the applicant for execution. The agreement must be executed by the applicant and returned within three (3) calendar weeks after receipt. The agreement shall set forth the approved project scope, budget (cash flow analysis), total project costs, and the approved commencement and completion dates for the project or major phases thereof.

(9) The project funding agreement shall set forth the amount of funding assistance. The amount may not exceed the amount of funds available.

(10) The amount and term of funding assistance shall be determined at the time of award. The time period is subject to extension for excusable delay, at the discretion of the Commissioner.

(11) The amount of financial assistance shall not exceed 100% of the cost eligible for grant and loan. Calculation of a grant or loan available shall first include a deduction of financial assistance available from other sources.

(12) The municipality may finance short term debt through the marketplace or from the Clean Water Fund.

(A) Accrued interest on funds borrowed from the marketplace shall be paid at the time of borrowing.

(B) Accrued interest on amounts borrowed from the Clean Water Fund may be either paid at the time of such borrowing or become part of the principal to be repaid over the term of the project and shall be determined by the Commissioner at the time of issuance of the project funding obligation. Short term interest shall be charged at the rate of 2% per year compounded annually for all outstanding loan balances. Interest on short term obligations shall be computed on the basis of a year of 360 days and the number of days elapsed. Interest shall be charged from the date a check is issued from the fund to the municipality.

(13) Grant proceeds shall be disbursed only upon a determination by the Commissioner that satisfactory documentation of eligible grant costs have been received.

(14) The Commissioner shall establish a procedure for disbursement of grant and loan proceeds to the municipalities.

(15) The municipality shall use the proceeds of the project loan and the project grant solely for the purpose of funding the project. The municipality shall promptly disburse to all contractors the proceeds of such project loan and project grant on the same day that it receives proceeds from the state.

(16) The municipality shall agree and covenant in the project funding agreement that it shall, at all times, do and perform all acts and things reasonably requested by the state to insure interest paid on any tax exempt obligations issued by the state to fund the Clean Water Fund shall, for the purposes of federal income taxation, be excludable from the gross income of the recipients thereof under the Internal Revenue Code of 1986, as amended.

(17) The municipality shall have all project costs, loans, and grants audited by an auditor approved by the Commissioner.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-2

Department of Environmental Protection

(18) The municipality shall repay to the Clean Water Fund all outstanding loan balances, including principal and interest accrued, within twenty years from the scheduled completion date of the project.

(19) The municipality shall establish a dedicated source of repayment of the loan satisfactory to the Commissioner.

(20) Each project loan obligation shall be paid in substantially equal monthly installments of principal and interest or in monthly installments of principal plus interest which shall be substantially equal and which shall be arranged such that no principal installment payable in any month shall be less than the amount of any installment payable in any subsequent month.

(21) Payments on long term loans shall begin one year from the scheduled completion date of the project. Should excusable delay cause the actual completion to go beyond scheduled completion the Commissioner and the municipality shall enter into a project funding agreement to cover project cost incurred after the specified date.

(22) The Commissioner shall make loans to the municipalities at an interest rate not to exceed two percent compounded annually.

(23) Interest on the loan shall be computed on the basis of 360 days and the actual number of days elapsed.

(24) The Commissioner may provide short term loans to municipalities for planning and design, as applicable, of an eligible water quality project. The municipalities may not be required to begin repaying its short term loan for planning or design, as applicable, until six months after the date of completion of such planning or design provided the municipality must commence design or construction, as applicable, within six months.

(25) The municipality shall comply with the following federal laws and Executive Orders:

- (A) Archeological and Historic Preservation Act of 1974, P.L. 93-291;
- (B) Coastal Barrier Resources Act, 16 U.S.C. 3501 et seq.;
- (C) Coastal Zone Management Act of 1972, P.L. 92-583;
- (D) Endangered Species Act, 16 U.S.C. 1531, et seq.;
- (E) Executive Order 11593, Protection and Enhancement of the Cultural Environment;
- (F) Executive Order 11990, Protection of Wetlands;
- (G) Farmland Protection Policy Act, 7 U.S.C. 4201 et. seq.;
- (H) Fish and Wildlife Coordination Act, P.L. 85-624;
- (I) National Historic Preservation Act of 1966, P.L. 89-665;
- (J) Safe Drinking Water Act, section 1424 (e), P.L. 92-523;
- (K) Wild and Scenic Rivers Act, P.L. 90-542;
- (L) Demonstration Cities and Metropolitan Development Act of 1966, P.L. 89-754;
- (M) Section 306 of the Clean Air Act and Section 508 of the Clean Water Act, including Executive Order 11738;
- (N) Brooks Murkowski Act, P.L. 100-202;
- (O) Age Discrimination Act, P.L. 94-135;

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-3

- (P) Civil Rights Act of 1964, P.L. 88-352;
- (Q) Section 13 of P.L. 92-500, prohibition against sex discrimination;
- (R) Executive Order 11246, Equal Employment Opportunity;
- (S) Executive Orders 11625 and 12138, Women's and Minority Business Enterprise;
- (T) Rehabilitation Act of 1973, P.L. 93-112, including Executive Orders 11914 and 11250;
- (U) Uniform Relocation and Real Property Acquisition Policies Act of 1970, P.L. 91-646;
- (V) Executive Order 12549, Debarment and Suspension;
- (W) Executive Order 11988, Flood Plain Management; and
- (X) Clean Air Act, 42 U.S.C. 7506 (c).

(Effective March 5, 1992)

Sec. 22a-482-3. Technical program elements

(a) Engineering Report Requirements.

(1) General. Engineering reports consist of those necessary plans and studies which directly relate to the development of pollution abatement strategies and the construction of pollution abatement facilities necessary to comply with an Order to Abate Pollution as defined in section 22a-423 of the General Statutes. The engineering report will demonstrate the need for the proposed pollution abatement facility through an evaluation of all feasible alternatives and shall demonstrate that the selected alternative is cost-effective, i.e. is the most economical means of meeting effluent and water quality goals while recognizing environmental considerations.

(2) Content of Engineering Reports. The content of the engineering report shall be determined by the Commissioner based on a pre-report conference with the municipality and its engineering consultant regarding the precise plan of study (engineering report outline) and resulting scope of services to be performed. Engineering reports shall address at a minimum each of the following as determined appropriate by the Commissioner:

(A) A detailed evaluation of the existing and potential wastewater treatment and disposal problems in the study area;

(B) a cost-effective analysis of alternatives available to correct the pollution problems identified. The final selection of alternative(s) to correct the problems noted shall be based on the results of the cost-effective analysis, including the present worth or equivalent annual value of all capital costs, and operation, maintenance and replacement costs. The interest rate used for this analysis shall be the rate established by the Federal Water Resources Council for use in federally funded projects. The population forecasting in the analysis shall be consistent with current projections of the Connecticut Office of Policy and Management. A cost-effective analysis shall include:

- (i) the relationship of the size and capacity of the recommended facilities to the needs to be served, including any reserve capacity;
- (ii) an evaluation of alternative flow and waste reduction measures, including

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-3

Department of Environmental Protection

nonstructural methods;

(iii) an evaluation of improved effluent quality attainable by upgrading the operation, maintenance and efficiency of existing facilities as an alternative or supplement to construction of new pollution abatement facilities;

(iv) an evaluation of the capability of each alternative to meet applicable effluent limitations and water quality standards;

(v) various treatment techniques including: conventional biological or physical-chemical treatment and discharge systems; land application techniques and other innovative and alternative techniques which may result in recycling of water and pollutants; onsite and nonconventional systems, both community and individual;

(vi) an evaluation of the alternative methods for the ultimate disposal of treated wastewater and sludge materials resulting from the treatment process and a justification for the method(s) chosen; and

(vii) an adequate assessment of the expected environmental impact of alternatives (including sites) under the requirements of sections 22a-1a to 22a-1h, inclusive, of the General Statutes;

(C) if applicable, a demonstration of the non-existence or possible existence of excessive infiltration/inflow in the affected sewerage system;

(D) an identification of proposed effluent discharge limits, if appropriate, and a description of how the proposed project will result in compliance with any pollution abatement order issued by the Commissioner;

(E) a summary of public participation in the development of the engineering report;

(F) a brief statement demonstrating that the local authorities who will be implementing the plan have the necessary legal, financial, institutional, and managerial resources available to insure the construction, operation and maintenance of the proposed pollution abatement facilities;

(G) a brief description of potential opportunities for recreation, open space, and access to bodies of water afforded by the recommended project; and

(H) for the selected alternative, a concise description of at least the following;

(i) estimated capital construction, and operation and maintenance costs;

(ii) estimated cost of future expansion and long term needs for reconstruction of pollution abatement facilities following their useful life;

(iii) cost impacts on pollution abatement facility users; and

(iv) a statement concerning the availability and estimated cost of any proposed treatment sites.

(3) Public Participation.

(A) The scope and level of detail of the public participation program shall be determined during the development of the plan of study. The program shall be comprised of public forums such as workshops, meetings and hearing(s) as necessary to promote public awareness and input into the planning process.

(B) At a minimum, prior to adoption of the engineering report, the municipality must

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-3

hold a public hearing to describe the proposed program and action(s) and to assure that the public's concerns are fully considered.

(C) The time and place of the public hearing shall be conspicuously and adequately announced at least 10 days in advance, or for such longer period as may be required by local ordinance or charter. Copies of the engineering report must be made available for inspection by the public at least 10 days prior to the hearing.

(D) A request to waive the public hearing on an engineering report may be submitted in writing to the Commissioner when the municipality determines a public hearing is not necessary and would not serve the public interest.

(4) Environmental Review. Prior to the award of a project funding agreement for design or construction, the requirements of the Connecticut Environmental Policy Act (sections 22a-1 to 22a-1h, inclusive, of the General Statutes) shall have been met. The municipality must prepare an adequate environmental assessment of expected environmental impacts consistent with the requirements of sections 22a-1a to 22a-1h, inclusive, of the General Statutes as part of facility planning. Projects receiving financial assistance shall comply with the following:

(A) for any project not required in the department's Environmental Classification Document to undergo an environmental impact evaluation or finding of no significant impact, the Commissioner shall publish a notice in a newspaper of community-wide circulation indicating the determination that a Finding of No Significant Impact is not necessary and that supporting documentation for this determination is available for inspection.

(B) when the Commissioner determines that significant changes in the project or environmental conditions have occurred, an amendment to the Environmental Impact Evaluation or the Finding of No Significant Impact or the determination that a Finding of No Significant Impact is not necessary will be issued in accordance with sections 22a-1a to 22a-1h, inclusive, of the General Statutes.

(C) for Environmental Impact Evaluations, Findings of No Significant Impact, or determinations that a Finding of No Significant Impact is not necessary which are five or more years old for projects seeking a construction project funding agreement, the Commissioner shall re-evaluate the project, environmental conditions and public comments and prior to financial award shall either:

(i) issue a public notice in a newspaper of community-wide circulation reaffirming the decision to proceed with the project without revising the Finding of No Significant Impact or Environmental Impact Evaluation or reaffirming that a Finding of No Significant Impact is not necessary; or

(ii) update information and prepare or amend the Environmental Impact Evaluation or Finding of No Significant Impact in accordance with sections 22a-1a to 22a-1h, inclusive, of the General Statutes;

(iii) withdraw the Finding of No Significant Impact and prepare an Environmental Impact Evaluation in accordance with the sections 22a-1a to 22a-1h, inclusive, of the

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-3

Department of Environmental Protection

General Statutes.

(D) in the development of the Finding of No Significant Impact, the Commissioner shall include a description and analysis of the reasonable alternatives to the proposed action, including no action.

(b) **Small Community Systems.** Projects proposed to be funded from the Reserve for Small Communities shall be for improvements to existing wastewater treatment systems or new collector sewers, interceptor sewers and treatment works serving small communities. Routine interceptor sewer extensions within municipalities that do not meet the definition of a small community are not eligible for funding from this reserve. Categories of projects eligible for assistance under this reserve are: (1) projects involving improvements to or construction of collector sewers, interceptor sewers and treatment works for which the entire proposed service area within the municipality meets the definitions of a small community; and (2) projects for interceptor sewers connecting a service area meeting the definition of a small community to a wastewater treatment facility in another municipality. In order to be eligible for funding under this reserve, the applicant must demonstrate to the satisfaction of the Commissioner that the only alternative to the proposed project would be the construction of new treatment works which would involve a discharge of treated wastewater which would result in violation of, or require a revision to, the State's Water Quality Standards and Criteria as adopted pursuant to section 22a-426 of the General Statutes.

(c) **Privately Owned Individual Systems.**

(1) A municipality may apply for funding assistance to construct privately owned pollution abatement facilities serving one or more principal residences or small commercial establishments.

(2) In addition to the engineering report requirements set forth in subsection (a) of this section the municipality shall:

(A) demonstrate that the total present worth cost and environmental impact of building the individual systems will be less than the present worth cost of a larger municipally owned pollution abatement facility;

(B) demonstrate to the satisfaction of the Commissioner that the individual systems proposed are part of a technically feasible and implementable program which will successfully address all existing and potential wastewater treatment needs within the planning area;

(C) certify that each principal residence or small commercial establishment was constructed before July 1, 1983, and inhabited or in use on or before that date;

(D) apply on behalf of a number of individual units to be served in the planning area;

(E) certify that, where public ownership of such works is not feasible, the municipality will have unlimited right of access to the site and to the system for the purpose of necessary inspection, maintenance, and repair;

(F) certify that such treatment works will be properly operated and maintained and will comply with all other requirements of sections 22a-482-1 to 22a-482-4 of the Regulations of Connecticut State Agencies, applicable state statutes and regulations; and

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-3

(G) certify that a user charge system, established in compliance with section (e) of this subsection, will be developed and implemented to ensure the availability of financial resources sufficient to ensure the proper operation, maintenance, and eventual repair or replacement of funded facilities and those individual systems which are within the service area identified in subparagraph (B) of this subsection but which are not required and replaced with the assistance funds.

(d) Value Engineering (VE)

(1) Value Engineering Proposal. All design funding assistance applications for projects having a projected total building cost of \$10 million or more, including the cost for interceptor and collector sewers, will contain a VE proposal. The VE proposal must contain sufficient information for the Commissioner to determine the adequacy of the VE effort and the justification of the proposed VE fee. Essential information shall include the scope of VE analysis, VE team and VE coordinator (names and backgrounds), level of VE effort, VE cost estimate, and VE schedule in relation to the project schedule (including completion of VE analysis and submittal of VE summary reports). The VE coordinator and a majority of the VE team members shall be employed by a firm (or firms) other than the design engineering consultant.

(2) Value Engineering Analysis. When the VE analysis is completed, a preliminary report summarizing the VE findings and a final report describing implementation of the VE recommendations must be submitted to the Commissioner.

(3) Value Engineering Implementation. For those projects on which a VE analysis has been performed, VE recommendations shall be implemented to the maximum extent feasible, as determined by the municipality, subject to the approval of the Commissioner. Rejection of any recommendations shall be on the basis of cost-effectiveness, reliability, and other factors that may be critical to the treatment processes, the environmental impact of the project and the extent of project delays.

(e) User Charge System. The user charge system must be designed to produce adequate revenues required for the operation, maintenance, and replacement of the pollution abatement facilities. It shall provide that each user which discharges wastewaters to the system, causing an increase in the cost of operating and maintaining the pollution abatement facilities, shall pay for such increased cost. The user charge system shall be based on either actual use or ad valorem taxes as follows:

(1) User Charge System Based on Actual Use. A municipality's user charge system based on actual use (or estimated use) of wastewater treatment services shall provide that each user (or user class) pays its proportionate share of operation and maintenance (including replacement) costs of the pollution abatement facilities within the municipality's service area, based on the user's proportionate contribution to the total wastewater loading from all users (or user classes).

(2) User Charge System Based on Ad Valorem Taxes. A municipality's user charge system which is based on ad valorem taxes shall provide that:

(A) on the effective date of sections 22a-482-1 to 22a-482-4, inclusive, of the

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-3

Department of Environmental Protection

Regulations of Connecticut State Agencies, the municipality had in existence a system of dedicated ad valorem taxes which collected revenues to pay the cost of operation and maintenance of the pollution abatement facilities within the municipality's service area and the municipality has continued to use that system;

(B) each member of the industrial user and commercial user class which discharges more than 25,000 gallons per day of sanitary waste pays its share of the costs of operation and maintenance (including replacement) of the pollution abatement facilities based upon charges for actual use; and

(C) the Commissioner determines that the municipality has historically demonstrated that the ad valorem system has resulted in proper operation, maintenance and management of the pollution abatement facilities, including the sewer system.

(3) Notification. Each user charge system must provide that each user be notified, at least annually, in conjunction with a regular bill, of the rate and that portion of the user charges or ad valorem taxes which are attributable to wastewater treatment services.

(4) Financial Management System. Each user charge system must include an adequate financial management system that will accurately account for revenues generated by the system and expenditures for operation and maintenance (including replacement) of the treatment system.

(5) Charges for Operation and Maintenance for Extraneous Flows. The user charge system shall provide that the costs of operation and maintenance for all flow not directly attributable to users (i.e., infiltration/inflow) be distributed among all users based upon either of the following:

(A) in the same manner that it distributes the costs for their actual use; or

(B) under a system which uses one or any combination of the following factors on a reasonable basis:

(i) flow volume of the users;

(ii) land area of the users;

(iii) number of hookups or discharges of the users; or

(iv) property valuation of the users, if the municipality has an approved user charge system based on ad valorem taxes.

(6) Adoption of System. One or more municipal legislative enactments or other appropriate authority must incorporate the user charge system. If the project is a treatment system accepting wastewaters from other municipalities, the subscribers receiving waste treatment services from the municipality shall adopt user charge systems in accordance with this section. These user charge systems shall also be incorporated in appropriate municipal legislative enactments or other appropriate authority of all municipalities contributing wastes to the pollution abatement facilities. Grant payments shall not exceed 90% of the total construction grant award until the municipality has adopted the approved user charge system.

(7) Implementation of System. The municipality shall implement its user charge system before the pollution abatement facility is placed in operation.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-3

(f) Sewer Use Ordinance.

(1) Each municipality applying for funding assistance shall demonstrate to the satisfaction of the Commissioner that a sewer use ordinance or other legally binding requirement has been or will be enacted and will be enforced in each jurisdiction served by the pollution abatement facility before the completion of construction. The ordinance shall prohibit any new connections from inflow sources into the sanitary sewer portions of the pollution abatement facility; shall insure that new sewers and connections to the pollution abatement facility are properly designed and constructed; and shall require that all wastewaters introduced into the pollution abatement facility will not contain toxics or other pollutants in amounts or concentrations that endanger public safety or the physical integrity of the pollution abatement facility, cause violation of the conditions of any permit issued by the Commissioner, or preclude the selection of the most cost-effective alternative for wastewater treatment and sludge disposal.

(2) Grant payments shall not exceed 50% of the total construction grant award until the municipality has submitted a copy of its sewer use ordinance to the Commissioner for review.

(3) Grant payments shall not exceed 90% of the total construction grant award until the municipality's sewer use ordinance has been approved by the Commissioner and enacted by the municipality.

(4) The municipality shall adopt and implement its sewer use ordinance before the pollution abatement facility is placed in operation.

(g) Infiltration/Inflow.

(1) General. The municipality shall demonstrate to the Commissioner's satisfaction that each sewer system discharging into the proposed pollution abatement facility is not, or will not, be subject to excessive infiltration/inflow. For combined sewers, inflow is not considered excessive in any event.

(2) Inflow. If the rainfall induced peak inflow rate results or will result in chronic operational problems during storm events, the municipality shall perform a study of the sewer system to determine the quantity of excessive inflow and to propose a rehabilitation program to eliminate the excessive inflow. All cases in which pollution abatement facilities are planned for the specific storage and/or treatment of inflow shall be subject to a cost-effective analysis.

(3) Infiltration.

(A) If the flow rate at the existing pollution abatement facility is 150 gallons per capita per day or less during periods of high groundwater, the municipality shall build the project including sufficient capacity to transport and treat any existing infiltration. However, if the municipality believes any specific portion of its sewer system is subject to excessive infiltration, the municipality may confirm its belief in a cost-effective analysis and propose a sewer rehabilitation program to eliminate that specific excessive infiltration.

(B) If the flow rate at the existing pollution abatement facility is significantly more than 150 gallons per capita per day during periods of high groundwater, the municipality shall

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

perform a study of the sewer system to determine the quantity of excessive infiltration and to propose a sewer rehabilitation program to eliminate the excessive infiltration.

(C) If the flow rate at the existing pollution abatement facility is not significantly more than 150 gallons per capita per day, the municipality may request the Commissioner to determine that the project may proceed without further study.

(D) The Commissioner may authorize the municipality to perform minor sewer system rehabilitation concurrently with the sewer system evaluation survey if there is no adverse environmental impact. Rehabilitation which would be a part of the municipality's normal operation and maintenance responsibilities shall not be fundable.

(h) **Reserve Capacity.** The Commissioner will limit grant assistance for reserve capacity in pollution abatement facilities as follows:

(1) no grant shall be made to provide reserve capacity for a project for secondary or more stringent treatment or new interceptors and appurtenances. Grants for such projects shall be based on capacity necessary to serve existing needs as determined on the date of award of the construction grant and shall be consistent with the definition for eligible capacity established for the Federal Construction Grants Program in 40 CFR 35.2123; and

(2) the Commissioner shall require the construction of reasonable reserve capacity.

(Effective March 5, 1992)

Sec. 22a-482-4. Administrative program elements

(a) **Allowable Grant Costs.** Those costs associated with the planning, design and construction of pollution abatement facilities eligible for state grant assistance are as follows:

- (1) costs of salaries, benefits, and expendable materials the municipality incurs for the project, except as provided for in subdivision (b) (8) of this section;
- (2) costs under construction contracts;
- (3) professional and consultant services;
- (4) engineering report costs directly related to the pollution abatement facility;
- (5) sewer system evaluation;
- (6) project feasibility and related engineering reports;
- (7) costs of complying with the Connecticut Environmental Policy Act, section 22a-1a to 22a-1h of the General Statutes, including costs of public notices and hearings;
- (8) preparation of construction drawings, specifications, estimates and construction contract documents;
- (9) reasonable landscaping;
- (10) materials acquired, consumed, or expended specifically for the project;
- (11) shop equipment installed at the pollution abatement facility necessary to the operation of the facility;
- (12) a reasonable inventory of laboratory chemicals and supplies necessary to initiate plant operations;
- (13) development and preparation of a preliminary and final plan of operation and an

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

operation and maintenance manual;

(14) start-up services for new pollution abatement facilities;

(15) project identification signs;

(16) costs of complying with the procurement requirements of this section;

(17) the costs of technical services for assessing the merits of or negotiating the settlement of a claim by or against the municipality provided;

(A) a formal grant amendment is executed specifically covering the costs before they are incurred;

(B) the costs are not incurred to prepare documentation that should be prepared by the contractor to support a claim against the municipality; and

(C) the Commissioner determines that there is a significant state interest in the issues involved in the claim;

(18) change orders and the costs of meritorious contractor claims for increased costs, provided the costs are not caused by the municipality's mismanagement or vicarious liability for the improper action of others. Settlements, arbitration awards, and court judgments which resolve contractor claims shall be reviewed by the Commissioner and shall be allowable only to the extent they are not caused by municipality mismanagement, are reasonable, and do not attempt to pass on to the State of Connecticut the costs of events that were the responsibility of the municipality, contractor or others;

(19) costs necessary to mitigate only direct, adverse, or physical impacts resulting from the building of the pollution abatement facility;

(20) the cost of groundwater monitoring facilities necessary to determine the possibility of groundwater deterioration, depletion or modification resulting from the project;

(21) for individual and small community systems, allowable costs which include:

(A) the cost of major rehabilitation, upgrading, enlarging and installing small and onsite systems, but in the case of privately owned systems, only for principal residences;

(B) conveyance pipes from the property line to an offsite treatment unit which serves a cluster of buildings;

(C) treatment and treatment residue disposal portions of toilets with composting tanks, oil flush mechanisms, or similar in-house devices;

(D) treatment or pumping units from the incoming flange, when located on private property, and conveyance pipes, if any, to the collector sewer; and

(E) the cost of restoring individual system building sites to their original condition;

(22) necessary safety equipment applicable to federal, state and local requirements;

(23) a portion of the costs of collection system maintenance equipment, as determined by the Commissioner;

(24) the cost of mobile equipment necessary for the operation of the overall pollution abatement facility, transmission of wastewater or sludge, or for the maintenance of equipment. These items include:

(A) portable stand-by generators;

(B) large portable emergency pumps to provide "pump-around" capability in the event

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

of a pump station failure or pipeline breaks; and

(C) sludge or septic tank trucks, trailers, and other vehicles having as their sole purpose the transportation of liquid or dewatered wastes from the collector point (including individual or on-site systems) to the pollution abatement facility or disposal site;

(25) replacement parts identified and approved in advance by the Commissioner as necessary to assure uninterrupted operation of the pollution abatement facility, provided they are critical parts or major system components which are:

(A) not immediately available or whose procurement involves an extended “lead-time”;

(B) identified as critical by the equipment supplier(s); or

(C) critical but not included in the inventory provided by the equipment supplier(s);

(26) allowable costs for infiltration/inflow which include:

(A) the cost of sewer system and pollution abatement facility capacity adequate to transport and treat nonexcessive infiltration/inflow; and

(B) the costs of sewer system rehabilitation necessary to eliminate excessive infiltration/inflow as determined in a sewer system evaluation survey under section 22a-482-3 (g);

(27) the costs of royalties for the use of rights in a patented process or product with the prior approval of the Commissioner;

(28) the cost of legal and engineering services incurred by the municipality in deciding procurement protests and defending their decisions in protest appeals with the prior approval of the Commissioner;

(29) the cost of the services of the prime engineer required under subdivision (p) (10) of this section during the first year following initiation of operation of the pollution abatement facility; and

(30) the costs of municipal employees attending training workshops or seminars that are necessary to provide instruction in administrative, fiscal or contracting procedures required to complete the construction of the pollution abatement facility, if approved in advance by the Commissioner.

(b) **Unallowable Grant Project Costs.** Costs which are not necessary for the construction of a pollution abatement facility are unallowable. Such costs include, but are not limited to:

(1) basin or areawide planning not directly related to the project;

(2) bonus payments not legally required for completion of construction before a contractual completion date;

(3) personal injury compensation or damage arising out of the project whether determined by arbitration, negotiation, or otherwise;

(4) unallowable costs for small and onsite systems which include:

(A) modification to physical structure of homes or commercial establishments;

(B) conveyance pipes from the house to the treatment unit located on user’s property; and

(C) wastewater generating fixtures such as commodes, sinks, tubs and drains;

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

- (5) fines and penalties due to violations of, or failure to comply with, federal, state, or local laws and regulations;
- (6) costs outside the scope of the approved project;
- (7) approval, preparation, issuance and sale of bonds or other forms of indebtedness required to finance the project, and the interest on them;
- (8) ordinary operating expenses of local government, such as salaries and expenses of a mayor, city council members, or city attorney, except as provided in subdivision (h) (13) of this section;
- (9) the costs of acquisition (including associated level, administrative, and engineering) of sewer rights-of-way, pollution abatement facility sites (including small systems sites), sanitary landfill sites and sludge disposal sites, except as provided in subsection (c) of this section;
- (10) costs for which payment has been or will be received under any federal assistance program;
- (11) the cost of vehicles used primarily for transportation, such as pickup trucks;
- (12) costs of equipment or materials acquired in violation of the procurement provisions of this section;
- (13) the cost of furnishings including draperies, furniture and office equipment;
- (14) the cost of ordinary site and building maintenance equipment, such as lawn mowers, snowblowers and vacuum cleaners;
- (15) costs of monitoring equipment used by industry for sampling and analysis of industrial discharges to a municipal pollution abatement facility;
- (16) construction of privately owned pollution abatement facilities, including pretreatment facilities, except for individual systems;
- (17) preparation of applications, including a plan of study and permits required by federal, state or local laws and regulations;
- (18) administrative, engineering and legal activities associated with the establishment of special departments, agencies, commissions, regions, districts or other units of government;
- (19) the cost of a pollution abatement facility or any part thereof that would provide capacity for new habitation or other establishments to be located on environmentally sensitive land such as wetlands, floodplains, or prime agricultural lands;
- (20) the costs of legal services of defending or negotiating the settlement of a claim by or against the municipality; and
- (21) all incremental costs of delay due to the award of any significant subagreements for construction more than 12 months after the construction grant award.

(c) Allowable Grant Project Costs, If Approved.

- (1) The cost (including associated legal, administrative and engineering costs) of land acquired in fee simple or by lease or easement that will be an integral part of the treatment process or that will be used for the ultimate disposal of residues resulting from such treatment provided the Commissioner approves it in the grant agreement. These costs

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

include:

(A) the cost of a reasonable amount of land, considering irregularities in application patterns, and the need for buffer areas, berms, and dikes;

(B) the cost of land acquired for a soil absorption system for a group of two or more homes;

(C) the cost of land acquired for composting or temporary storage of compost residues which result from wastewater treatment;

(D) the cost of land acquired for storage of treated wastewater in land treatment systems before land application; and

(E) the cost paid by the municipality for eligible land in excess of just compensation based on the appraised value, the municipality's record of negotiation or a condemnation proceeding, as determined by the Commissioner, shall be unallowable.

(2) The cost associated with the preparation of the pollution abatement facility site before, during and, to the extent agreed on in the grant agreement, after building. These costs include:

(A) the cost of demolition of existing structures on the pollution abatement facilities site (including rights-of-way), if building cannot be undertaken without such demolition;

(B) the cost of removal, relocation or replacement of utilities, for which the municipality is legally obligated to pay under section 22a-479 of the General Statutes; and

(C) the cost of restoring streets and rights-of-way to their original condition. The need for such restoration shall result directly from the construction and is generally limited to repaving the width of trench.

(3) The cost of acquiring all or part of existing publicly or privately owned pollution abatement facilities, provided all of the following criteria are met:

(A) the acquisition, in and of itself, considered apart from any upgrade, expansion or rehabilitation, provides new pollution control benefits;

(B) the acquired pollution abatement facility was not built with previous federal or state financial assistance; and

(C) the primary purpose of the acquisition is not the reduction, elimination, or redistribution of public or private debt.

(d) Allowable Loan Project Costs:

(1) all costs allowable for grant participation under subsections (a) and (c) of this section;

(2) all costs necessary to complete the project including land, legal, rights-of-way, interest and claim settlements;

(3) all costs associated with incremental capacity for growth; and

(4) those costs a reasonable business person would incur when operating his or her own business necessary to construct the project.

(e) Unallowable Loan Project Costs:

(1) costs associated with improvements to municipal or private property not related to pollution control;

(2) costs associated with the liability of other contractors and subcontractors; and

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

(3) costs associated with waste, fraud or abuse.

(f) Required Provisions for Architectural/Engineering Contracts.

(1) Subagreement Enforcement.

(A) Commissioner's Authority. At a municipality's request the Commissioner may provide technical and legal assistance in the administration and enforcement of any subagreement related to a pollution abatement facility for which state financial assistance was made and intervene in any civil action involving the enforcement of such subagreements, including subagreement disputes which are the subject of either arbitration or court action. Any assistance to be provided is at the discretion of the Commissioner and in a manner determined by him or her to best serve the public interest. Factors which the Commissioner may consider in determining whether to provide assistance include:

- (i) available department resources;
- (ii) planned or ongoing enforcement action;
- (iii) the municipality's demonstration of good faith in attempting to resolve the contract matters at issue;
- (iv) the municipality's adequate documentation of the need for assistance; and
- (v) the state's interest in the contract matters at issue.

(B) Municipality Request. The municipality's request for technical or legal assistance should be submitted in writing and be accompanied by documentation adequate to inform the Commissioner of the nature and necessity of the requested assistance.

(C) Privity of Subagreement. The Commissioner's technical or legal involvement in any subagreement dispute will not make the Commissioner a party to any subagreement entered into by the municipality.

(D) Municipality Responsibility. The provision of technical or legal assistance under this section in no way releases the municipality from its obligations under sections 22a-482-1 to 22a-482-4, inclusive, or affects the Commissioner's right to take remedial action against a municipality that fails to carry out those obligations.

(2) Subagreement Provisions.

(A) Each subagreement shall include provisions defining a sound and complete agreement, including the:

- (i) nature, scope, and extent of work to be performed;
- (ii) time frame for performance;
- (iii) total cost of the subagreement; and
- (iv) payment provisions.

(B) All subagreements awarded in excess of \$10,000 shall contain provisions requiring compliance with state and federal equal employment opportunity laws and regulations.

(3) Model Subagreement Clauses. Municipalities shall include subparagraphs (A) to (L), inclusive, of this subdivision or their equivalent in all subagreements for architectural or engineering services. (Municipalities may substitute other terms for "municipality" and "engineer" in their subagreements.)

(A) Supersession. The municipality and the engineer agree that this and other appropriate

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

clauses in this section, or their equivalent, apply to the state grant eligible work to be performed under this subagreement and that these clauses supersede any conflicting provisions of this subagreement.

(B) Privity of Subagreement. This subagreement is expected to be funded in part with funds from the State of Connecticut, Department of Environmental Protection (DEP). Neither the state nor any of its departments, agencies, or employees is or will be a party to this subagreement or any lower tier subagreement. This subagreement is subject to sections 22a-482-1 to 22a-482-4 of the Regulations of Connecticut State Agencies in effect on the date of the grant award for the project.

(C) Changes to Subagreement.

(i) The municipality may at any time, by written order, make changes within the general scope of this subagreement in the services or work to be performed. If such changes cause an increase or decrease in the engineer's cost or time required to perform any services under this agreement, whether or not changed by any order, an equitable adjustment shall be made and this subagreement shall be modified in writing. The engineer must assert any claim for adjustment under this clause in writing within 30 days from the date of receipt by the engineer of the notification of change, unless the municipality grants additional time before the date of final payment.

(ii) No services for which additional compensation will be charged by the engineer shall be furnished without the written authorization of the municipality.

(iii) In the event that there is a modification of the Commissioner's requirements relating to the services to be performed under this agreement after the date of execution of this agreement, the increased or decreased cost of performance of the services provided for in the agreement shall be reflected in an appropriate modification of this agreement.

(D) Termination of Subagreement.

(i) This subagreement may be terminated in whole or in part in writing by either party in the event of substantial failure by the other party to fulfill its obligations under this subagreement through no fault of the terminating party. However, 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.

(ii) This subagreement may be terminated in whole or in part in writing by the municipality for its convenience, provided that the engineer 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.

(iii) If termination for default is effected by the municipality, an equitable adjustment in the price provided for in this subagreement shall be made, but no amount shall be allowed for anticipated profit on unperformed services or other work and any payment due to the engineer at the time of termination may be adjusted to cover any additional costs to the municipality because of the engineer's default. If termination for default is effected by the

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

engineer; 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 engineer for services rendered and expenses incurred prior to the termination, in addition to termination and settlement costs reasonably incurred by the engineer relating to commitments which had become firm prior to the termination.

(iv) Upon receipt of a termination action pursuant to subparagraphs (D) (i) or (D) (ii) of this subdivision, the engineer shall promptly discontinue all services affected (unless the notice directs otherwise) and deliver or otherwise make available to the municipality all data, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by the engineer in performing this subagreement, whether completed or in process.

(v) Upon termination under subparagraphs (D) (i) or (D) (ii) of this subdivision, the municipality may take over the work and may award another party a subagreement to complete the work under this subagreement.

(vi) If, after termination for failure of the engineer to fulfill contractual obligations, it is determined that the engineer 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 subagreement shall be made as provided in subparagraph (D) (iii) of this subdivision.

(E) Remedies. Except as may be otherwise provided in this subagreement, all claims, counter-claims, disputes, and other matters in question between the municipality and the engineer arising out of or relating to this subagreement, 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.

(F) Price Reduction for Defective Cost or Pricing Data (This clause is applicable if the amount of the agreement exceeds \$100,000). The engineer warrants that cost and pricing data submitted for evaluation with respect to negotiation of prices for negotiated subagreements and lower tier subagreements is based on current, accurate, and complete data supported by books and records. If the municipality or Commissioner determines that any price, including profit, negotiated in connection with this subagreement, any lower tier subagreement, 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 subagreement shall be modified in writing to reflect such reduction.

(NOTE— Since the subagreement is subject to reduction under this clause by reason of defective cost or pricing data submitted in connection with certain subcontractors, the engineer may wish to include a clause in each such subcontract requiring the subcontractor to appropriately indemnify the engineer. It is also expected that any subcontractor subject to such indemnification will generally require substantially similar indemnification for defective cost or pricing data required to be submitted by lower tier subcontractors.)

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

(G) Audit; Access to Records.

(i) The engineer shall maintain books, records, documents, and other evidence directly pertinent to performance on grant work under this agreement in accordance with generally accepted accounting principles and practices consistently applied. The engineer shall also maintain the financial information and data used by the engineer in the preparation or support of the cost submission required for any negotiated subagreement or change order in effect on the date of execution of this agreement and a copy of the cost summary shall be submitted to the municipality. The municipality and Commissioner or any of his or her duly authorized representatives shall have access to all such books, records, documents, and other evidence for inspection, audit, and copying during normal business hours. The engineer will provide proper facilities for such access and inspection.

(ii) The engineer agrees to include subparagraphs (G) (i) to (G) (v) of this subdivision, inclusive, in all his contracts and all lower tier subcontracts directly related to project performance that are in excess of \$10,000, and to make subparagraphs (G) (i) to (G) (v) of this subdivision, inclusive, applicable to all change orders directly related to project performance.

(iii) Audits conducted under this subparagraph shall be in accordance with generally accepted auditing standards and established procedures and guidelines of the reviewing or audit department and shall meet the requirements of section 7-396a of the General Statutes.

(iv) The engineer agrees to the disclosure of all information and reports resulting from access to records under subparagraphs (G) (i) and (G) (ii) of this subdivision to any of the parties referred to in subparagraph (G) (i) of this subdivision, provided that the engineer is afforded the opportunity for an audit exit conference and an opportunity to comment and submit any supporting documentation on the pertinent portions of the draft audit report and that the final audit report will include written comments of reasonable length, if any, of the engineer.

(v) The engineer shall maintain and make available records under subparagraphs (G) (i) and (G) (ii) of this subdivision during performance on grant funded work under this agreement and until three (3) years from the date of final grant payment for the project. In addition, those records which relate to any dispute appeal arising under a grant 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 (3) years after the date of resolution of such appeal, litigation, claim, or exception.

(H) Covenant Against Contingent Fees. The engineer warrants that no person or selling agency has been employed or retained to solicit or secure this subagreement upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by the engineer for the purpose of securing business. For breach or violation of this warranty the municipality shall have the right to annul this agreement without liability or, in its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

(I) Gratuities.

(i) If the municipality finds after a notice and hearing that the engineer, or any of the engineer'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 subagreement 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 engineer, terminate this agreement. The municipality may also pursue other rights and remedies that the law or this subagreement 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 subparagraph (E) of this subdivision.

(ii) In the event this subagreement is terminated as provided in subparagraph (I) (i) of this subdivision the municipality may pursue the same remedies against the engineer as it could pursue in the event of a breach of the subagreement by the engineer and, as a penalty, in addition to any other damages to which it may be entitled by law may pursue exemplary damages in an amount (as determined by the municipality) which shall be not less than three, nor more than ten times the costs the engineer incurs in providing any such gratuities to any such officer or employee.

(J) Responsibility of the Engineer.

(i) The engineer shall be responsible for the professional quality, technical accuracy, timely completion, and the coordination of all designs, drawings, specifications, reports, and other services furnished by the engineer under this subagreement. The engineer shall, without additional compensation, correct or revise any errors, omissions, or other deficiencies in his designs, drawings, specifications, reports, and other services.

(ii) The engineer shall perform the professional services necessary to accomplish the work required to be performed under this subagreement, in accordance with this subagreement and applicable requirements of the Commissioner in effect on the date of execution of the assistance agreement for this project.

(iii) Approval by the municipality or the Commissioner of drawings, designs, specifications, reports, and incidental work or materials furnished hereunder shall not, in any way, relieve the engineer of responsibility for the technical adequacy of his work. Neither the municipality's nor Commissioner's review, approval, acceptance, or payment for any of the services shall be construed as a waiver of any rights under this subagreement or of any cause of action arising out of the performance of this subagreement.

(iv) The engineer shall be and shall remain liable, in accordance with applicable law, for all damages to the municipality or the state caused by the engineer's negligent performance of any of the services furnished under this subagreement, except for errors, omissions, or other deficiencies to the extent attributable to the municipality, municipality-furnished data, or any third party. The engineer shall not be responsible for any time delays in the project caused by circumstances beyond the engineer's control.

(v) The engineer's obligations under this subparagraph are in addition to the engineer's other expressed or implied warranties under this subagreement or state law and in no way

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

diminish any other rights that the municipality may have against the engineer for faulty materials, equipment, or work.

(K) Payment.

(i) Payment shall be made in accordance with the payment schedule incorporated in this subagreement, as soon as practicable, upon submission of statements requesting payment by the engineer to the municipality. If no such payment schedule is incorporated in this subagreement, the payment provisions of subparagraph (K) (ii) of this subdivision shall apply.

(ii) The engineer may request monthly progress payments and the municipality shall make them, as soon as practicable, upon submission of statements requesting payment by the engineer to the municipality. When such progress payments are made, the municipality may withhold up to ten (10) percent of the vouchered amount until satisfactory completion by the engineer of work and services within a step called for under this subagreement. When the municipality determines that the work under this subagreement, or any specified task hereunder, is substantially complete and that the amount of retained percentages is in excess of the amount considered by the municipality to be adequate for its protection, it shall release to the engineer such excess amount.

(iii) No payment request made under subparagraph (K) (i) or (K) (ii) of this subdivision shall exceed the estimated amount and value of the work and services performed by the engineer under this subagreement. The engineer shall prepare the estimates of work performed and shall supplement them with such supporting data as the municipality may require.

(iv) Upon satisfactory completion of the work performed under this subagreement, as a condition precedent to final payment under this subagreement or to settlement upon termination of the subagreement, the engineer shall execute and deliver to the municipality a release of all claims against the municipality arising under or by virtue of this subagreement, other than such claims, if any, as may be specifically exempted by the engineer from the operation of the release in stated amounts to be set forth therein.

(L) Copyrights and Rights in Data.

(i) The engineer agrees that any plans, drawings, designs, specifications, computer programs (which are substantially financed by state funds), technical reports, operating manuals, and other work submitted with an engineering report, with a design or for construction with financing assistance, or which are specified to be delivered under this subagreement, or which are developed or produced and paid for under this subagreement (referred to in subparagraph (L) (ii) of this subdivision as "subject data"), and including all raw data obtained or generated by the engineer during the course of his work under this subagreement, are subject to certain rights in the United States. These rights include the right to use, duplicate, and disclose such subject data, in whole or in part, in any manner for any purpose whatsoever, and to have others do so. If the material is copyrightable, the engineer may copyright it, subject to the rights of the state described herein, but the municipality and the state reserve a royalty-free, nonexclusive, and irrevocable license to

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

reproduce, publish, and use such materials, in whole or in part, and to authorize others to do so. The engineer shall include appropriate provisions to achieve the purpose of this condition in all subcontracts expected to produce copyrightable subject data; and

(ii) all such subject data furnished by the engineer pursuant to this subagreement are instruments of his services in respect to the project. It is understood that the engineer does not represent such subject data to be suitable for reuse on any other project or for any other purpose. If the municipality reuses the subject data without the engineer's specific written verification or adaptation, such reuse will be at the risk of the municipality without liability to the engineer. Any such verification or adaptation will entitle the engineer to further compensation at rates agreed upon by the municipality and the engineer.

(g) **Required Provisions for Construction Contracts.** Municipalities must include, when appropriate, subdivisions (1) to (14), inclusive, of this subsection, or their equivalent, in each subagreement and may substitute other terms for "grantee" and "contractor" in their subagreements.

(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.

(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 subject to sections 22a-482-1 to 22a-482-4, inclusive, of the Regulations of Connecticut State Agencies.

(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 subdivision (3) of this subsection, no order, statement, or conduct of the municipality shall be treated as a change under subdivision (3) of this subsection or entitle the contractor to an equitable adjustment.

(D) If any change under subdivision (3) of this subsection 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 subparagraph (B) of this subdivision shall be

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

allowed for any costs incurred more than 20 days before the contractor gives written notice as required in subparagraph (B) of this subdivision. 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 shall, within thirty (30) days after receipt of a written change order under subparagraph (A) of this subdivision, or the furnishing of a written notice under subparagraph (B) of this subdivision, 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 subparagraph (B) of this subdivision.

(F) No claim by the contractor for an equitable adjustment shall be allowed if made after final payment under this contract.

(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 or adjustment under this clause shall be asserted within thirty (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 is made obsolete or excessive 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 subdivision shall excuse the contractor from proceeding with the subagreement as changed.

(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

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

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 subdivision shall be allowed unless the contractor has given notice required in subparagraph (A) of this subdivision. 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.

(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 subdivision 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 subdivision shall be allowed for any costs incurred more than twenty (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.

(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 other 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

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

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 subparagraphs (A) or (B) of this subdivision, the contractor shall promptly discontinue all services affected (unless the notice directs otherwise), and deliver or otherwise make available to the municipality 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 subparagraphs (A) or (B) of this subdivision 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 subparagraph (C) of this subdivision.

(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.

(9) Price Reduction for Defective Cost or Pricing Data.

NOTE— This subdivision 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 subdivision 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

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

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 subdivision (8) of this subsection.

NOTE— Since the contract is subject to reduction under this subdivision 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 subcontractors.

(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) (6) 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 or her 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 subparagraphs (A) to (F), inclusive, of this subdivision 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 subparagraphs (A) to (F), inclusive, of this subdivision in all his subcontracts in excess of \$10,000 and to subparagraphs (A) through (F), inclusive, of this subdivision applicable to all change orders directly related to project performance.

(C) Audits conducted under this subdivision shall be in accordance with generally accepted auditing standards and established procedures and guidelines of the reviewing or audit departments and shall meet the requirements of section 7-396a of the General Statutes.

(D) The contractor agrees to disclose all information and reports resulting from access to records under subparagraphs (A) and (B) of this subdivision to any of the parties referred to in subparagraph (A) of this subdivision.

(E) Records under subparagraphs (A) and (B) of this subdivision 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

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

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 provision (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.

(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.

(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 subdivision (8) of this subsection.

(B) In the event this contract is terminated, as provided in subparagraph (A) of this subdivision, the municipality 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, may pursue 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.

(13) **Responsibility of the Contractor.**

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

(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 subdivision are in addition to the contractor's other express or implied 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.

(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 agencies under this agreement or applicable performance and payment bonds.

(h) Procurement Requirements—General.

(1) Applicability. This subsection defines the responsibilities of the state and the municipality and the minimum procurement standards for each municipality's procurement system.

(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

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

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, 22a-482-4.

(G) A municipality may use innovative procurement methods or procedures only if it receives the Commissioner's prior written approval.

(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.

(4) Copies of Contract Documents. The municipality shall promptly submit to the Commissioner copies of any prime contract or modification thereof, and revisions to plans and specifications.

(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 a Connecticut state agency.

(6) Violations. The municipality shall refer violations of law to the local or state officials having the proper jurisdiction.

(7) Competition.

(A) The municipality shall conduct all procurement transactions in a manner that

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

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.

(8) Profit.

(A) Municipalities shall 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 subparagraph.

(9) Use of Small, Minority, and Women's Businesses. The municipality shall 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 assistance.

(10) Privity of Subagreement. The state shall not be a party to any subagreement nor to any solicitation or request for proposals.

(11) Documentation.

(A) Procurement records and files for procurements in excess of \$10,000 shall include the following:

- (i) the 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; and

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

(v) the basis for award cost or price, including a copy of the cost or price analysis made and documentation of negotiations; and

(B) The municipality shall 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.

(12) Specifications.

(A) Nonrestrictive Specifications.

(i) No specification for bids or statement of work 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 shall be prepared to identify to the Commissioner, or in any protest action, the salient requirements (relating to the minimum needs of the project) which shall 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 shall 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.

(13) Force Account Work.

(A) The municipality shall receive the Commissioner's prior written approval for use of the force account method for any planning, design work or construction work, unless the grant agreement stipulates the force account method.

(B) The Commissioner may approve the force account method upon the municipality's

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

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.

(14) Code of Conduct.

(A) The municipality shall maintain a written code or standard 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 subparagraph (B) (i) of this subdivision.

(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.

(15) Payment to Consultants.

(A) For all state assistance agreements, the state shall 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 shall pay these costs 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.

(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.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

(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.

(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.

(18) Negotiation and Award of Subagreements.

(A) Unless the request for proposals states that an award may be based on initial offers alone, the municipality shall 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 shall have equal opportunities to negotiate or revise their proposal. During negotiations, the municipality shall not disclose the identity of competing offerors or any information from competing proposals.

(B) The municipality shall 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 shall promptly notify unsuccessful offerors that their proposals were rejected.

(D) The municipality shall 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.

(19) Optional Selection Procedure for Negotiation and Award of Subagreements 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) of this subsection.

(B) The municipality may use responses from requests for statements of qualifications to determine the most technically qualified architects or engineers.

(C) After selecting and ranking the most qualified architects or engineers, the municipality shall request technical proposals from those architects or engineers and inform them of the evaluation criteria the municipality will use to rank the proposals.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

(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 shall 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.

(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.

(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 subparagraph (A) of this subdivision to retain an architect or engineer, any construction subagreements between the architect or engineer and the municipality shall meet the procurement provisions of subdivision (i) (5) of this section.

(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 subparagraph (B) of this subdivision 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); or

(ii) the aggregate amount involved does not exceed \$10,000; or

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

(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 shall document its file with a justification of the need for noncompetitive procurement, and provide such documentation to the Commissioner on request; or

(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; or

(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; or

(vi) the procurement is for materials or services where the price is established by law; or

(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.

(23) Enforcement. If the Commissioner determines that the municipality has failed to comply with any of the provisions of this subsection, he or she may impose any of the following sanctions:

(A) the grant may be terminated or annulled under subsection (t) of this section; or

(B) project costs directly related to the noncompliance may be disallowed; or

(C) payment otherwise due to the municipality of up to 10 percent may be withheld; or

(D) project work may be suspended under subdivision (g) (6) of this section; or

(E) a noncomplying municipality may be found nonresponsible or ineligible for future state funding assistance or a noncomplying contractor may be found nonresponsible or ineligible for approval for future contract awards under state grants; or

(F) an injunction may be entered or other equitable relief afforded by a court of appropriate jurisdiction; or

(G) such other administrative or judicial action may be instituted if it is legally available and appropriate.

(24) Contract Enforcement and 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 subdivision (f) (1) of this section.

(i) Architectural/Engineering Procurement Requirements.

(1) Type of Contract (Subagreement).

(A) General. Cost-plus-percentage-of-cost and percentage-of-construction-cost contracts are prohibited. Cost reimbursement, fixed price, or per diem contracts or combinations of these may be negotiated for architectural or engineering services. A fixed price contract is generally used only when the scope and extent of work to be performed is clearly defined.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

In most other cases, a cost reimbursement type of contract is more appropriate. A per diem contract may be used if no other type of contract is appropriate. An incentive fee may be used if the municipality submits an adequate independent cost estimate and price comparison.

(B) Cost Reimbursement Contract. Each cost reimbursement contract shall clearly establish a cost ceiling which the engineer may not exceed without formally amending the contract and a fixed dollar profit which may not be increased except in the case of a contract amendment to increase the scope of work.

(C) Fixed Price Contract. An acceptable fixed price contract is one which establishes a guaranteed maximum price which may not be increased unless a contract amendment increases the scope of work.

(D) Compensation Procedures. If, under either a cost reimbursement or fixed price contract, the municipality desires to use a multiplier type of compensation, all of the following must apply:

- (i) the multiplier and the portions of the multiplier allocable to overhead and allocable to profit have been specifically negotiated;
- (ii) the portion of the multiplier allocable to overhead includes only allowable items of cost under the cost principles;
- (iii) the portions of the multiplier allocable to profit and allocable to overhead have been separately identified in the contract; and
- (iv) the fixed price contract includes a guaranteed maximum price for completion of the specifically defined scope of work; and the cost reimbursement contract includes a fixed dollar profit which may not be increased except in the case of a contract amendment which increases the scope of work.

(E) Per Diem Contracts. A per diem agreement may be utilized only after a determination that a fixed price or cost reimbursement type contract is not appropriate. Per diem agreements should be used only to a limited extent, e.g., where the first task under the planning agreement involves establishing the scope and cost of succeeding planning tasks or for incidental services such as expert testimony or intermittent professional or testing services. (Resident engineer and resident inspection services should generally be compensated at cost plus fixed fee). Cost and profit included in the per diem rate must be specifically negotiated and displayed separately in the engineer's proposal.

The contract must clearly establish a price ceiling which may not be exceeded without formally amending the contract.

(2) Public Notice. Adequate public notice must be given of the requirement for architectural or engineering services for all subagreements.

(A) Public Announcement. A notice of request for qualifications should be published in professional journals, newspapers, or publications of general circulation over a reasonable area and, in addition, if desired, through posted public notices or written notification directed to interested persons, firms, or professional organizations inviting the submission of statements of qualifications. The announcement must clearly state the deadline and place

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

for submission of qualification statements.

(B) Exceptions. Public notice is not required under the following circumstances:

(i) for design or construction phases of a grant funded project if the municipality is satisfied with the qualifications and performance of any engineer who performed all or any part of the planning or design work and the engineer has the capacity to perform the subsequent steps; and

(ii) the municipality desires the same engineer to provide architectural or engineering services for the subsequent steps or for subsequent segments of design work in one project, if a single pollution abatement facility is segmented into two or more construction projects. If the design work is accordingly segmented so that the initial contract for preparation of construction drawings and specifications does not cover the entire pollution abatement facility to be built under one grant then the municipality may use the same engineering firm that was selected for the initial segment of design work for subsequent segments.

(3) Evaluation of Qualifications.

(A) The municipality shall review the qualifications of firms which responded to the announcement or were on the prequalified list and shall uniformly evaluate the firms.

(B) Qualifications shall be evaluated through an objective process (e.g., the appointment of a board or committee which, to the extent practicable, should include persons with technical skills).

(C) Criteria which should be considered in the evaluation of candidates for submission of proposals should include:

(i) specialized experience and technical competence of the candidate or firm and its personnel (including a joint venture, association or professional subcontractor) considering the type of services required and the complexity of the project;

(ii) past record of performance on contracts with the municipality, other government agencies or public bodies, and with private industry, including such factors as control of costs, quality of work, and ability to meet schedules;

(iii) the candidate's capacity to perform the work (including any specialized services) within the time limitations, considering the firm's current and planned workload;

(iv) the candidate's familiarity with the types of problems applicable to the project; and

(v) avoidance of personal and organizational conflicts of interest.

(4) Solicitation and Evaluation of Proposals.

(A) Solicitation of Professional Services Proposals.

(i) Requests for professional services proposals shall be sent to no fewer than three candidates who either responded to the public announcement or were selected from the prequalified list, unless, after good faith effort to solicit qualifications, fewer than three qualified candidates respond, in which case all qualified candidates shall be provided requests for proposals.

(ii) Requests for professional services proposals shall be in writing and must contain the information necessary to enable a prospective offeror to prepare a proposal properly. The request for proposals shall include a solicitation statement and shall inform offerors of the

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

evaluation criteria.

(iii) Submission deadline. Requests for proposals shall clearly state the deadline and place for submission.

(B) Evaluation of Proposals.

(i) All proposals submitted in response to the request for professional services proposals shall be uniformly evaluated. The municipality shall also evaluate the candidates' proposed method of accomplishing the work required.

(ii) Proposals shall be evaluated through an objective process (e.g., the appointment of a board or committee) which, to the extent practicable, should include persons with technical skills. Oral (including telephone) or written interviews should be conducted with top rated proposers and information derived therefrom shall be treated on a confidential basis.

(iii) Municipalities shall base their determinations of qualified offerors and acceptable proposals solely on the evaluation criteria stated in the request for proposals.

(5) Negotiation.

(A) Municipalities are responsible for negotiation of their contracts for architectural or engineering services. Contract procurement, including negotiation, may be performed by the municipality directly or by another person or firm retained for that purpose. Contract negotiations may include the services of technical, legal, audit, or other specialists to the extent appropriate.

(B) Negotiations may be conducted in accordance with state or local requirements, as long as they meet the minimum requirements as set forth in this subdivision.

(C) The object of negotiation with any candidate shall be to reach agreement on the provisions of the proposed contract. The municipality and the candidate shall discuss, at a minimum:

(i) the scope and extent of work and other essential requirements;

(ii) identification of the personnel and facilities necessary to accomplish the work within the required time including, where needed, employment of additional personnel, subcontracting, joint venture, etc;

(iii) provisions of the required technical services in accordance with regulations and criteria established for the project; and

(iv) a fair and reasonable price for the required work, to be determined in accordance with the cost and profit considerations.

(6) Cost and Price Considerations.

(A) The candidate(s) selected for negotiation shall submit to the municipality for review sufficient cost and pricing data to enable the municipality to ascertain the necessity and reasonableness of costs and amounts proposed and the allowability and eligibility of costs proposed.

(B) The municipality shall submit the following to the Commissioner for review:

(i) documentation of the public notice of need for architectural or engineering services and selection procedures;

(ii) the cost and pricing data the selected engineer submitted;

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

(iii) a certification of review and acceptance of the selected engineer's cost and price; and

(iv) a copy of the proposed subagreement.

(C) The Commissioner shall review the complete subagreement procurement procedure and approve the municipality's compliance with appropriate procedures before the municipality awards the subagreement.

(D) Cost Review.

(i) The municipality shall review proposed subagreement costs.

(ii) At a minimum, proposed subagreement costs shall be presented on EPA form 5700-41 on which the selected engineer shall certify that the proposed costs reflect complete, current, and accurate cost and pricing data applicable to the date of anticipated subagreement award.

(iii) 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 contracts and a maximum total dollar amount of profit shall be set forth separately in the cost summary for cost reimbursement contracts.

(iv) The municipality may require more detailed cost data than the form requires in order to substantiate the reasonableness of proposed subagreement costs. The Commissioner may require more detailed documentation only when the selected engineer is unable to certify that the cost and pricing data used are complete, current, and accurate. The Commissioner may, on a selected basis, perform a pre-award cost analysis on any subagreement. A provisional overhead rate should be agreed upon before contract award.

(v) The engineer shall have an accounting system which accounts for costs in accordance with generally accepted accounting principles. This system shall provide for the identification, accumulation, and segregation of allowable and unallowable project costs among projects. Allowable project costs shall be determined by the Commissioner. The engineer shall propose and account for costs in a manner consistent with his normal accounting procedures.

(vi) Subagreements awarded on the basis of a review of a cost element summary and a certification of complete, current, and accurate cost and pricing data shall be subject to downward renegotiation or recoupment of funds where the Commissioner determines that such certification was not based on complete, current, and accurate cost and pricing data or was not based on allowable costs at the time of award.

(7) Profit. The objective of negotiations shall be the exercise of sound judgment and good administrative practice including the determination of a fair and reasonable profit based on the firm's assumption of risk and input to total performance and not merely the application of a predetermined percentage factor. For the purpose of subagreements under state grants, profit is defined as the net proceeds obtained by deducting all allowable costs (direct and indirect) from the price. (This definition of profit may vary from the firm's definition of profit for other purposes.) Profit on a subagreement and each amendment to a subagreement under a grant should be sufficient to attract engineers who possess the talent

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

and skills necessary for the accomplishment of project objectives and to stimulate efficient and expeditious completion of the project. Where cost review is performed, the municipality should review the estimate of profit as it reviews all other elements of price.

(8) Award of Subagreement.

(A) The municipality shall obtain the written approval of the Commissioner prior to the award of any subagreement or amendment.

(B) The municipality shall promptly notify unsuccessful candidates.

(9) Required Solicitation and Subagreement Provisions.

(A) Required solicitation statement. Requests for qualifications or proposals must include the following statement, as well as the proposed terms of the subagreement.

Any contract awarded under this request for qualifications or professional proposals is expected to be funded in part by the State of Connecticut, Department of Environmental Protection. This procurement will be subject to requirements contained in subsections (h), (i) and (o) of this section. The State of Connecticut will not be a party to this request for qualifications or professional proposals or any resulting contract.

(B) Content of subagreement. Each subagreement shall adequately define the scope and extent of project work; the time for performance and completion of the contract work including, where appropriate, dates for completion of significant project tasks; personnel and facilities necessary to accomplish the work within the required time; the extent of subcontracting and consultant agreements; and payment provisions. If any of these elements cannot be defined adequately for later tasks or steps at the time of contract execution, the contract should not include the subsequent tasks or steps at that time.

(10) Subagreement Payments. The municipality shall make payment to the engineer in accordance with the payment schedule incorporated in the engineering agreement. Any retainage is at the option of the municipality. No payment request made by the engineer under the agreement may exceed the estimated amount and value of the work and services performed.

(11) Subcontracts under Subagreements. Neither award and execution of subcontracts under a prime contract for architectural or engineering services nor the procurement and negotiation procedures used by the engineer in awarding such subcontracts are required to comply with any of the provisions, selection procedures, policies or principles set forth herein.

(j) **Construction Contract Procurement Requirements.** (This section applies to construction contracts in excess of \$10,000 awarded by municipalities for any construction projects.)

(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.

(2) Formal Advertising. Each contract shall be awarded after formal advertising, unless negotiations are permitted in accordance with subdivision (18) of subsection (h) of this

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

section. 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 dollars or more, the municipality shall 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, shall 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-serve 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, 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 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 subsections (h), (j) and (o) of this section;

- (vi) a copy of subsections (h), (j) and (o) of this section; 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.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

(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 nonresponsive or nonresponsive. 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 the resolution of the protest and is not barred by state or local law.

(vi) The municipality shall not reject a bid as nonresponsive 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 nonresponsive and shall cause rejection of a bid.

(k) Negotiation of Contract Amendments (Change Orders).

(1) 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.

(2) The contract price or time may be changed only by a change order. When negotiations are required, they shall be conducted in accordance with subdivisions (3) and (4) of this subsection 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 subparagraphs (A) to (C) of this subdivision, whichever is most advantageous to the municipality.

(A) Unit prices.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

(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) Lump Sums shall 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.

(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.

(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 subparagraphs (A) to (E) of this subdivision 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 subsections (a), (b), (c), (d) and (e) of this section. The contractor shall 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.

(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:

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

- (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.

(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.

(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 subdivision (4) of this subsection. For change orders which include both additive and deductive items:

(A) if any single item (additive or deductive) exceeds \$100,000 the requirements of subdivision (4) of this subsection 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 subdivision (4) of this subsection 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 subdivision (4) of this subsection shall be applicable.

(l) Subcontracts under Construction Contracts.

(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 subsection (h) or (j) of this section, except those specifically stated in this section. In addition, the bid protest procedures in subsection (o) of this section are not available to parties executing subcontracts with prime contractors, except as specifically provided in subsection (o) of this section.

(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 shall 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 subdivisions (8) and (9) of section 22a-482-4 (g).

(m) Progress Payments to Contractors.

(1) Except as state law otherwise provides, municipalities shall make prompt progress payments to prime contractors and prime contractors should make prompt progress

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

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.

(2) Conditions of Progress Payments. For purposes of this subsection, progress payments are defined as follows:

(A) payments for work in place; or

(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 shall be made if provisions therefor 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 six months is anticipated.

(3) Protection of Progress Payments Made for Specifically Manufactured Equipment. The municipality shall assure protection of the state's interest in progress payments made for items or equipment referred to in subparagraph (2) (C) of this subsection. The protection shall be acceptable to the municipality and shall 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.

(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

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

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 subparagraphs (A) (i) or (A) (ii) of this subdivision 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 shall 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 subsection, 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.

(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.

(6) Contract Provisions. Where applicable, appropriate provisions regarding progress payments shall be included in each contract and subcontract.

(7) Implementation. The foregoing progress payments policy should be implemented in invitations for bids for projects funded by the Clean Water Fund. If provision for progress payments is made after contract award, it shall be for consideration that the municipality deems adequate.

(n) Retention from Progress Payments.

(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

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

(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.

(2) The requirements set out in subdivision (1) of this subsection shall be implemented with respect to all construction projects. Appropriate provision to assure compliance with these requirements shall 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.

(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 these actions.

(o) Protests.

(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 subparagraph (2) (A) of this subsection. The municipality is responsible for resolution of the protest before taking the protested action, in accordance with subdivision (4) of this subsection, except as otherwise provided by subdivision (9) of this subsection or subparagraph (j) (2) (iv) (v).

(2) Time Limitations.

(A) A protest under subdivision (4) of this subsection 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 subdivision (4) of this subsection shall 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 subdivision (h) (12) of this section (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 subdivision (h) (12) of this section first arises subsequent to the receipt of bids or proposals, the municipality shall make a determination on 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 authorized under this subsection shall 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

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

will objectively establish the date of receipt. Initiation of protest actions under subdivisions (4) or (5) of this subsection 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.

(3) Other Initial Requirements.

(A) The initial protest document shall briefly state the basis for the protest and should:

(i) refer to the specific portions of sections 22a-482-1 to 22a-482-4 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 shall 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.

(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 subdivision (7) of this subsection; 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 shall 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.

(5) Procedures.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

(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; or
- (ii) the established or consistent practice of the municipality, to the extent appropriate;

or

- (iii) the law of other local jurisdictions as established in published legal decisions; or
- (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 shall 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.

(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 shall bear the burden of proving that its determination concerning responsiveness is in accordance with Section 22a-482-1 to 22a-482-4; and

(ii) if the basis for the municipality's determination is a finding of nonresponsibility, the municipality shall establish and substantiate the basis for its determination and shall adequately establish that such determination has been made in good faith.

(7) Deferral of Procurement Action. Upon receipt of a protest, the municipality shall 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 shall notify the municipality promptly to defer its protested procurement action until notified of the formal or informal resolution of the protest.

(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

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

subdivision (h) (23) of this section.

(9) Limitation. A protest may not be filed with respect to the following:

(A) issues not arising under the procurement provisions; or

(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 subsection (i) of this section; or

(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; or

(D) provisions of state regulations applicable to direct state contracts unless such provisions are explicitly referred to or incorporated in section 22a-482; or

(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, protests may be made to alleged violations of the following:

(i) specification requirements of subdivision (k) (12) of this section; or

(ii) provisions applicable to the procurement procedures, negotiation or award of subcontracts or issuance of purchase orders under subsection (1) of this section.

(p) **Funding Assistance Conditions.** Financing for pollution abatement facilities shall be subject to the following conditions:

(1) Municipality Responsibilities

(A) Review or approval of engineering reports, plans and specifications or other documents by the Commissioner is for administrative purposes only and does not relieve the municipality of its responsibility to properly plan, design, build and effectively operate and maintain the pollution abatement facilities described in the funding assistance agreement as required under law, regulations, permits, and good management practices. The Commissioner is not responsible for increased building costs resulting from defects in the plans, design drawings and specifications or other subagreement documents.

(B) By its acceptance of financing, the municipality agrees to complete the pollution abatement facilities in accordance with the engineering report, plans and specifications and related documents approved by the Commissioner and to maintain and operate the pollution abatement facilities to meet the enforceable requirements of the permit issued pursuant to section 22a-430 of the Connecticut General Statutes for the design life of the pollution abatement facilities. The Commissioner may seek specific enforcement or recovery of funds from the municipality, or take other appropriate action if he or she determines that the municipality has failed to make good faith efforts to meet its obligations under the grant/loan agreement.

(C) The municipality agrees to pay the non-state costs of the pollution abatement facilities construction associated with the project and commits itself to complete the construction of the operable pollution abatement facilities and the complete pollution abatement facilities of which the project is a part.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

(2) Nondiscrimination. All contracts are subject to the Governor's Executive Order No. Three and to the guidelines and rules issued by the State Labor Commission to implement Executive Order No. Three.

(3) Wage Rates. Contracts involving construction work are subject to the appropriate state wage rates issued by the State Labor Commissioner and federal wage rates issued by the United States Department of Labor.

(4) Access. The municipality shall insure that the Commissioner and his or her duly authorized agents shall have access to the project work whenever it is in preparation or progress. The municipality shall provide proper facilities for access and inspection. The municipality shall allow any authorized agent of the state to have access to any books, documents, plans, reports, papers, and other records of the contractor which are pertinent to the project for the purpose of making audit, examination, excerpts, copies and transcriptions. The municipality shall insure that a party to a subagreement shall provide access to the project work, sites, documents, and records.

(5) Project Changes.

(A) Minor changes in the project work that are consistent with the objectives of the project and within the scope of the funding agreement do not require the execution of a formal amendment before the municipality's implementation of the change. However, if such changes increase the costs of the project, the amount of the funding provided by the funding agreement may only be increased by a formal amendment.

(B) The municipality shall receive from the Commissioner a formal amendment before implementing changes which:

- (i) alter the project performance standards; or
- (ii) alter the type of treatment facilities provided by the project; or
- (iii) delay or accelerate the project schedule; or
- (iv) substantially alter the engineering report, design drawings and specifications, or the location, size, capacity or quality of any major part of the project.

(6) Operation and Maintenance.

(A) The municipality shall make provisions satisfactory to the Commissioner for assuring economical and effective operation and maintenance of the pollution abatement facilities in accordance with a plan of operation approved by the Commissioner.

(B) The Commissioner shall not pay more than 50 percent of the grant share of any project unless the municipality has an approved final plan of operation and shall not pay more than 90 percent of the grant share of any project unless the municipality has an approved operation and maintenance manual.

(7) Adoption of User Charge System and Sewer Use Ordinance.

The municipality shall adopt the sewer use ordinance and implement the user charge system developed under subsections (e) and (f) of 22a-482-3 and approved by the Commissioner before the pollution abatement facilities are placed in operation. Further, the municipality shall implement the user charge system and sewer use ordinance for the useful life of the pollution abatement facilities.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

(8) Value Engineering.

The municipality shall comply with the applicable requirements of section 22a-482-3 (d) for value engineering.

(9) Project Initiation and Completion.

(A) The municipality shall expeditiously initiate and complete the project in accordance with the project schedule contained in the funding agreement.

(B) The municipality shall initiate procurement action for building the project promptly after the award of financing. The Commissioner may annul or terminate the funding agreement if the municipality has not awarded the subagreements and issued a notice to proceed, where one is required, for building all significant elements of the project within twelve (12) months of the closing. Failure to promptly award all subagreement(s) for building the project shall result in a limitation on allowable grant costs.

(10) Municipality Responsibility for Project Performance.

(A) The municipality shall select the engineer or engineering firm principally responsible for either supervising construction or providing architectural and engineering services during construction as the prime engineer to provide the following services during the first year following the initiation of operation:

(i) direct the operation of the project and revise the operation and maintenance manual for the project as necessary to accommodate actual operating experience;

(ii) train or provide for training of operating personnel, including the preparation of curricula and training material for operating personnel; and

(iii) advise the municipality whether the project is capable of meeting the project performance standards.

(B) On the date one year after the initiation of operation of the project the municipality shall certify to the Commissioner whether the project is capable of meeting the project performance standards. If the project does not meet the project performance standards, the municipality shall submit the following:

(i) a corrective action report which includes an analysis of the cause of the project's inability to meet the performance standards (including infiltration/inflow reduction) and estimates of the nature, scope and cost of the corrective action necessary to bring the project into compliance. Such corrective action report shall be prepared at other than state expense;

(ii) the schedule for undertaking, in a timely manner, the corrective action necessary to bring the project into compliance; and

(iii) the scheduled date for certifying to the Commissioner that the project is capable of meeting the project performance standards.

(C) Corrective action necessary to bring a project into compliance with the project performance standards shall be undertaken by the municipality at other than state expense.

(D) Nothing in this section shall be construed to prohibit a municipality from requiring more assurances, guarantees, or indemnity or other contractual requirements from any party performing project work.

(11) Final Inspection. The municipality shall notify the Commissioner of the completion

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

of project construction and the Commissioner shall cause final inspection to be made within 60 days of receipt of the notice. When final inspection is completed and the Commissioner determines that the treatment works have been satisfactorily constructed, in accordance with the funding assistance agreement, the municipality may make a request for final payment under subdivision (s) (5) of this section.

(q) **Financial Assistance Agreement Amendments.**

(1) Agreements may be amended for project changes in accordance with this subsection. No agreement may be amended to increase the amount of assistance unless the funds are available for obligation. A formal amendment shall be effected only by a written amendment to the agreement.

(2) For financial assistance awarded under Sections 22a-482-1 to 22a-482-4, an amendment to increase the amount may be made for:

- (A) change orders, claims and arbitration settlements; or
- (B) revised bid documents; or
- (C) project changes required by the Commissioner; or
- (D) increased costs on architectural/engineering agreements.

(r) **Enforcement.** If the Commissioner determines that the municipality has failed to comply with any provision of these regulations, he or she may impose any of the following:

(1) the grant portion of the financing may be withheld under subdivisions (t) (3) or (t) (4) of this section.

(2) grant project costs directly related to the noncompliance may be disallowed; or

(3) project work may be suspended; or

(4) a noncomplying municipality may be found nonresponsible or ineligible for future state assistance; or

(5) an injunction may be entered or other equitable relief afforded by a court of appropriate jurisdiction; or

(6) such other administrative or judicial action may be instituted as is legally available and appropriate.

(s) **Grant and Loan Payments.** The municipality shall be paid the allowable project costs incurred within the scope of an approved project and which are currently due and payable from the municipality (i.e. not including withheld or deferred amounts), up to the amount set forth in the agreement and any amendments thereto. Payments for engineering services shall be made in accordance with subsection (f) of this section and payments for construction contracts shall be made in accordance with subsections (m) and (n) of this section. All allowable costs incurred before initiation of construction of the project shall be claimed in the application for assistance for that project before the award of the assistance or no subsequent payment shall be made for the costs.

(1) **Initial Request for Payment.** Upon award of financial assistance, the municipality may request payment for the unpaid share of allowable project costs incurred before the award. Payment for such costs shall be made in accordance with the negotiated payment schedule included in the agreement.

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

(2) Interim Requests for Payment. The municipality may submit requests for payments for allowable costs in accordance with the negotiated payment schedule included in the agreement. Generally, payments shall be made within 13 days after receipt of a request for payment.

(3) Adjustment. At any time before final payment under the agreement, the Commissioner may cause any request(s) for payment to be reviewed or audited and make appropriate adjustment.

(4) Refunds, Rebates, Credits, etc. The state share of any refunds, rebates, credits or other amounts (including any interest) that accrue to or are received by the municipality for the project, and that are properly allocable to costs which the municipality has received funding assistance shall be credited to the current state allotment. Reasonable expenses incurred by the municipality for the purpose of securing such refunds, rebates, credits, or other amounts shall be allowable when approved by the Commissioner.

(5) Final Payment. After completion of final inspection under subdivision (p) (11) of this section, receipt and approval of the request for payment which the municipality designates as the "final payment request," and the municipality is deemed in compliance with all applicable requirements of the funding agreement, the Commissioner shall pay to the municipality any balance of the share of allowable project costs which has not already been paid. The municipality must submit the final payment request within six (6) months of the scheduled completion.

(6) Assignment and Release. By its acceptance of final payment, the municipality agrees to assign to the state the state share of refunds, rebates, credits or other amounts, including any interest, properly allocable to costs for which the municipality has been paid by the state under the assistance agreement. The municipality thereby also releases and discharges the state, its officers, agents and employees from all liabilities, obligations, and claims arising out of the project work subject only to exceptions previously specified in writing between the Commissioner and the municipality.

(7) Audit Upon Completion of the Project. The municipality shall certify to the state that the project has been completed in accordance with the final plans and specifications approved by the Commissioner. The municipality shall within 90 days of such certification, prepare an audit of the project performed by an independent public accountant meeting the requirements of section 7-394a and 7-396a of the Connecticut General Statutes. Such audit shall be performed in accordance with generally accepted accounting principles and shall identify any expenditures made by the municipality not in conformance with the agreement. The municipality further agrees that the auditors of Public Accounts of the state shall have access to all records and accounts of the municipality concerning the project. To provide such access the municipality agrees that it shall preserve all its records and accounts concerning the project for a period of 3 years after the date such audit is delivered to the state.

(t) Administrative Changes.

(1) Transfer of Agreements; Change of Name Agreements. Transfer of an agreement and

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

change of name agreements require the prior written approval of the Commissioner. The municipality may not approve any transfer of an agreement without the concurrence of the Commissioner. The Commissioner shall prepare the necessary transfer documents upon receipt of appropriate information and documents submitted by the municipality.

(2) Suspension of Work (Stop Work Orders). Work on a project or on a portion or phase of a project for which funding assistance has been awarded may be ordered stopped by the Commissioner.

(A) Use of Stop-Work Orders. Work stoppage may be required for good cause such as default by the municipality, failure to comply with the terms and conditions of the funding agreement, realignment of programs, lack of adequate funding, or advancements in the state of the art. Inasmuch as stop-work orders may result in increased costs to the state by reason of standby costs, such orders will be issued only after a review by the Commissioner. Generally, use of a stop-work order shall be limited to those situations where it is advisable to suspend work on the project or a portion or phase of the project for important program or agency considerations and a supplemental agreement providing for such suspension is not feasible. Although a stop-work order may be used pending a decision to terminate by mutual agreement or for other cause, it shall not be used in lieu of the issuance of a termination notice after a decision to terminate has been made.

(B) Contents of stop-work orders should be discussed with the municipality and should be appropriately modified in light of such discussions. Stop-work orders should include a clear description of the work to be suspended, instructions as to the issuance of further orders by the municipality for materials or services, guidance as to action to be taken on subagreements, and other suggestions to the municipality for minimizing costs.

(C) Issuance of Stop-Work Order. After appropriate review of the proposed action has occurred, the Commissioner may, by written order to the municipality, require the municipality to stop all or any part of the project work for a period of not more than forty-five (45) days after the order is delivered to the municipality, and for any further period to which the parties may agree. The Commissioner shall prepare the necessary documents for the stop-work order. Any such order shall be specifically identified as a stop-work order issued pursuant to this subdivision.

(D) Effect of Stop-Work Order.

(i) Upon receipt of a stop-work order, the municipality shall forthwith comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Within the suspension period or within any extension of that period to which the parties shall have agreed, the state shall either cancel the stop-work order, in full or in part, terminate the work covered by such order as provided in subdivision (t) (3) of this section or authorize resumption of work.

(ii) If a stop-work order is cancelled or the period of the order or any extension thereof expires, the municipality shall promptly resume the previously suspended work. An equitable adjustment shall be made in the grant period, the project period, the grant amount, the funding assistance amount, or all of these, and the funding assistance instrument shall

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

Department of Environmental Protection

§22a-482-4

be amended accordingly if the stop-work order results in an increase in the time required for, or an increase in the municipality's cost properly allocable to, the performance of any part of the project and the municipality asserts a written claim for such adjustment within sixty (60) days after the end of the period of work stoppage.

(iii) If a stop-work order is not cancelled and the grant-related project work covered by such order is within the scope of a subsequently-issued termination order, the reasonable cost resulting from the stop-work order shall be allowed in arriving at the termination settlement.

(iv) Costs incurred by the municipality, its contractors, subcontractors, or representatives, after a stop-work order is delivered, or within any extension of the stop-work period to which the parties shall have agreed, with respect to the project work suspended by such order or agreement which are not authorized by this section or specifically authorized in writing by the Commissioner, shall not be allowable costs.

(3) Termination of Funding Agreements. A funding agreement may be terminated in whole or in part by the Commissioner in circumstances where good cause can be demonstrated.

(A) Termination Agreement. The parties may enter into an agreement to terminate the funding agreement at any time pursuant to terms which are consistent with these regulations. The agreement shall establish the effective date of termination of the project, the basis for settlement of termination costs, the amount and date of payment of any sums due either party, and the schedule of repayment of all sums borrowed from the Clean Water Fund by the municipality. The Commissioner shall prepare the necessary termination documents.

(B) Project Termination by Municipality. A municipality may not unilaterally terminate the project work except for good cause. The municipality shall promptly give written notice to the Commissioner of any complete or partial termination of the project work by the municipality. If the Commissioner determines that there is good cause for the termination of all or any portion of a project, he or she may enter into a termination agreement or unilaterally terminate, effective with the date of cessation of the project work by the municipality. If the Commissioner determines that a municipality has ceased work on the project without good cause, he or she may unilaterally terminate or annul the agreement.

(C) Termination by Commissioner.

(i) Notice of Intent to Terminate. The Commissioner shall give not less than ten (10) days written notice to the municipality of intent to terminate a funding agreement in whole or in part.

(ii) Termination Action. The municipality shall be afforded an opportunity for consultation prior to any termination. After the Commissioner has been informed of any expressed views of the municipality and concurs in the proposed termination, the Commissioner may, in writing, terminate the agreement in whole or in part.

(iii) Basis for Termination. An agreement may be terminated by the Commissioner for good cause subject to negotiation and payment of appropriate termination settlement costs.

(D) Effect of Termination. Upon termination, the municipality shall refund or credit to

Regulations of Connecticut State Agencies

TITLE 22a. Environmental Protection

§22a-482-4

Department of Environmental Protection

the state any funds paid or owed to the municipality and allocable to the terminated project work, except such portion thereof as may be required to meet commitments which had become firm prior to the effective date of termination and are otherwise allowable. The municipality shall not make any new commitment without state approval. The municipality shall reduce the amount of outstanding commitments insofar as possible and report to the Commissioner the uncommitted balance of funds awarded under the funding agreement.

(4) Annulment of Agreement.

The Commissioner may annul the funding agreement if he or she determines that there has been no substantial performance of the project work without good cause, there is convincing evidence the funding assistance was obtained by fraud, or there is convincing evidence of gross abuse or corrupt practices in the administration of the project. In addition to such remedies as may be available to the state under state or local law, all funds previously paid to the municipality shall be returned or credited to the state and no further payments shall be made to the municipality.

(5) Deviations. The Commissioner is authorized to approve deviations from requirements of Sections 22a-482-1 to 22a-482-4, when he or she determines that such deviations are essential to effect necessary actions or where special circumstances make such deviations in the best interest of the state.

(A) Request for Deviation. A request for a deviation shall be submitted in writing to the Commissioner as far in advance as the exigencies of the situation will permit. Each request for a deviation shall contain at a minimum:

- (i) the name of the municipality, the project identification number, and the dollar value, if appropriate;
- (ii) identification of the section of Sections 22a-482-1 to 22a-482-4 from which a deviation is sought;
- (iii) an adequate description of the deviation and the circumstances in which it shall be used, including all appropriate justification for the deviation request; and
- (iv) a statement as to whether the same or a similar deviation has been requested previously and, if so, circumstances of the previous request.

(B) Approval of Deviation. Deviations may be approved only by the Commissioner. A copy of each such written approval shall be retained in the official state project file.

(Effective March 5, 1992)

Contractors Exempt Purchase Certificate

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

CONTRACTOR'S
EXEMPT PURCHASE CERTIFICATE

Tow _____ 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 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 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:

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Executive Order No. Three

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

STATE OF CONNECTICUT

BY HIS EXCELLENCY

THOMAS J. MESKILL

GOVERNOR

EXECUTIVE ORDER NO. THREE

WHEREAS, sections 4-61d(b) and 4-114a 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 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 cancelled, terminated or suspended by the labor commissioner for violation of or noncompliance with this Order or state or federal laws concerning nondiscrimination, notwithstanding that the labor commissioner is not a party to such contract or subcontract.

II

Each contractor having a contract containing the provisions prescribed in section 4-114a 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 or 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 other 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, membership, 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.

The labor commissioner may by regulation exempt certain classes of contracts, subcontracts or purchase orders 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 respects 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 subcontractor 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 them 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 members 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, 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 to 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 apprenticeship 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 of 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.

(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. No order for disbarment of 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 of 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 cancelled, 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 cancelled, terminated, suspended absolutely or their continuance conditioned upon a program for fixture compliance approved by the contracting agency.

(5) Provide that any contracting agency shall refrain from entering into any further contracts 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 conference conciliation, mediation or persuasion, before other proceedings shall be instituted under this Order or before a state contract shall be cancelled or terminated in whole or in part for failure of the contractor or subcontractor to comply 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 commissioner 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 nondiscrimination in compliance with the provision of this order.

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 those 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.

Thomas J. Meskill, GOVERNOR

Filed this ____ day of June, 1971.

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Executive Order No. Seventeen

State Of Connecticut

By His Excellency

Thomas J. Meskill

Governor

Executive Order No. Seventeen

WHEREAS, Section 31-237 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 returning 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 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 cancelled, 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 with 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 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.
- 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 the 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 among its personnel one or more persons who shall be responsible for compliance with the objectives of this Order.
- V. The Labor Commissioner shall be and 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 conferences, 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, cancelled, or terminated in accordance with law any contract or portion or portions thereof for failure of the contractor or subcontractor to comply with the listing provisions of the contract. Contracts may be cancelled, 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.

Thomas J. Meskill
Governor

Filed this 15th day of February 1973.

Harry Hammer
Secretary Of The State (Deputy)

MBE/WBE Memorandum, May 25, 2016

**NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY**



Clean Water Fund Memorandum (2016-003)

**Disadvantaged Business Enterprise (DBE) Subcontractor Participation on Clean Water Fund
(CWF) Construction Projects**

I. PURPOSE

The municipality, through its Prime Contractor must make specified good faith efforts to attain the DBE goals as specified in this document in Section III. This is an administrative condition of the U.S. Environmental Protection Agency (EPA) Grant which funds Clean Water Fund Projects.

This memorandum supersedes the Clean Water Fund Memorandum Dated June 24, 2014

II. GOVERNING STATUTE OR REGULATION

General Compliance (Federal), 40 CFR, Part 33: The municipality, through its Prime Contractor must comply with the requirements of EPA's Program for Utilization of Small, Minority, and Women's Business Enterprises (MBE/WBE).

III. EPA REQUIREMENTS

The following clause shall be included in all construction contract documents for goods and services to be funded under the CWF:

The requirement for DBE subcontractor participation, expressed as a percentage of the total eligible contract amount, shall be a minimum of 8.0 percent with the following makeup:

MBE 3.0 percent WBE 5.0 percent

Failure to meet or exceed the required percentage or submit acceptable documentation of the six good faith efforts may render a bid non-responsive and may cause the bid to be rejected.

IV. CERTIFICATION

A DBE must be certified at the time that the subcontract for their services is executed. A business that is pending new certification, recertification, or whose certification has expired cannot be counted toward the goals.

In the case where a subcontractor DBE is certified as both a MBE and a WBE:

1. The prime contractor may count the entire value of the subcontract as either a MBE or a WBE.
2. The prime contractor may choose to split the subcontract between the MBE and the WBE categories to fulfill both goals. If the prime contractor chooses this route:
 - a. They must indicate the dollars to be apportioned to the categories either on the face of the copy of the fully executed subcontract submitted to the DEEP or by some other written method.

- b. The certification submitted to DEEP must indicate that the principal of the subcontractor is both a woman and a minority.
- c. For a certification that only identifies the subcontractor as a DBE, additional documentation is required as proof of dual status. In the case of ConnDOT, the detailed information page within their online database suffices as proof.

V. THE SIX GOOD FAITH EFFORTS AS SPECIFICALLY DEFINED BY EPA

The Six Good Faith Efforts are required methods employed by all DEEP Clean Water Fund recipients to ensure that all DBEs have the opportunity to compete for procurements funded by DEEP financial assistance dollars.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
6. If the Prime Contractor awards subcontracts, require the Prime Contractor to take the above steps.

The Prime Contractor's certification as a DBE has no effect on this requirement. Therefore, if the Prime Contractor is a DBE, the Six Good Faith Efforts defined above must be employed in the procurement of subcontracts to be secured to achieve the MBE 3.0% and WBE 5.0% participation. Also, for subcontracts for material suppliers, only 25% of the dollar value of their contracts may be applied toward the required percentage listed above unless that supplier manufactures those supplies and/or adds specialized input to the process.

VI. ACCEPTABLE CERTIFICATION OPTIONS

1. **Connecticut Department of Administrative Services (DAS)** - DEEP will continue to accept DAS certification until such time as other State entities are identified whose certification processes meet the EPA criteria. DAS will only certify Connecticut based firms that meet the criteria under CGS 4a-60g.
2. **Connecticut Department of Transportation (ConnDOT)** - Companies that desire to do business with ConnDOT as well as the DEEP should seek ConnDOT certification which will be accepted by the DEEP. DBE firms are advised that the certification process can take 90 days to complete. ConnDOT will certify both in state as well as out of state firms.

3. **The Environmental Protection Agency (EPA)** – In the event an entity cannot be certified by ConnDOT as a DBE, that entity should seek certification with EPA. Such entities must provide EPA with evidence from ConnDOT denying certification.
4. **Small Business Administration (SBA-Federal)**-SBA certification is available to companies under the Woman Owned Small Business (WOSB) program and the SBA 8(a) Business Development Program (www.sba.gov/8abd/) which has a net worth ceiling of \$250,000 for initial applicants.
5. **Other states certification**- Prime Contractors and Engineering Consultants may utilize certification from other states. Such certification must specify the DBE designation. Where there is no DBE certification option within a state, the instance must be presented to the DEEP Financial Administrator assigned to the project for consideration on a per case basis.

VII. DBE COMPLIANCE PROCESS

Within fourteen (14) calendar days after bid opening the apparent low bidder shall complete and submit to the municipality the Subcontractor Verification Form provided in the contract documents along with corresponding DBE certification for each subcontractor. The municipality must then submit copies as part of the bid application to DEEP as demonstration of compliance with this memorandum. **Failure to submit these documents by the close of business of the fourteenth calendar day after bid opening may result in the bid being deemed non-responsive and may cause the bid to be rejected.** Two executed copies of the DBE subcontracts must be submitted to the municipality, who must then submit one copy to the DEEP Financial Administrator as demonstration of compliance with this memorandum.

No payment requests will be processed by DEEP until the executed copies of the subcontracts are on file in the DEEP office.

It is understood that the Prime Contractor must make and document the good faith efforts as defined above. Should the contractor not meet the goals, documentation of good faith efforts will be required to be submitted to the DEEP Municipal Facilities Engineer for consideration that the good faith effort was extensive enough to warrant the acceptance of a lower goal for the specific contract in question.

The prime contractor is required to employ the six good faith efforts in that the DBE percentages shall be maintained or exceeded in the event of one subcontractor being substituted for another.

I hereby verify that I have read and understand the DBE requirements in this memorandum and will procure subcontracts whose percentages will meet or exceed the minimums listed above.

Contract Name _____

Prime Contractor Company Name _____

Prime Contractor Authorized Signature _____ Date _____

VIII. DEFINITIONS

CGS: Connecticut General Statutes

ConnDOT: Connecticut Department of Transportation

CWF: Clean Water Fund

DAS: Connecticut Department of Administrative Services

DBE: Disadvantaged Business Enterprise

DEEP: Department of Energy and Environmental Protection

EPA: Environmental Protection Agency (Federal)

MBE: Minority Business Enterprise

SBA: Small Business Administration (Federal)

WBE: Woman Business Enterprise

WOSB: Woman Owned Small Business (Federal program - SBA)

May 25, 2016
Date


Denise Ruzicka, Director
Planning and Standards Division
Bureau of Water Protection and Land Reuse

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY



Disadvantage Business Enterprise (DBE) Subcontractor Verification Form

Prime Contractor Company Name: _____

Contract Name/Number: _____

Contract Award Amount: \$ _____

Note to general contractor: You are required to complete this form listing each DBE (MBE or WBE) subcontractor to be employed in work eligible for the Clean Water Fund within the table below. Please submit an original of this completed form, along with each subcontractor's current, valid DBE certificate, to the municipality within 14 days of bid opening. In the event that this form is not submitted with the bid application, the bid could be rendered nonresponsive and rejected.

Subcontractor Name	Address/Phone/E-mail	Name of Contact	Dollar Amount* (25% for Suppliers)	MBE %	WBE %
Totals:					

**Supplier is defined as follows: A supplier is a business which acts as a distributor of materials or equipment and which provides a commercially useful function when such activity is traditional in the industry manufacturing the material or equipment supplied. Suppliers will receive 25% credit for providing supplies and receive 100% for manufacturing or fabrication of supply items. Haulers will receive 100% credit if they provide the material that is hauled. Commercially useful function will normally include:*

- 1. Providing Technical Assistance to the purchaser prior to the purchase, during installation and after the supplies or equipment are placed in service;*
- 2. Manufacturing or being first tier below manufacturer of the supplies or equipment supplied;*
- 3. Providing Functions other than just accepting and referring request for supplies or equipment to another party for direct shipment to a contractor.*

The completion and submission of this form does not constitute a contractual agreement between the general contractor and the named subcontractor, but is solely for documenting proposed compliance with DBE participation under the Department of Energy and Environmental Protection's (DEEP) Clean Water Fund (CWF). Should another subcontractor be substituted in place of any firm named above, both the municipality and the DEEP (Clean Water Fund Unit, 79 Elm Street, Hartford 06106-5127) should be notified in writing within three (3) business days of the change. This form must be updated for each instance in which a subcontractor is replaced or added. The DBE percentages shall be maintained or exceeded in the event of one subcontractor being substituted for another.

Prime Contractor Authorized Signature: _____

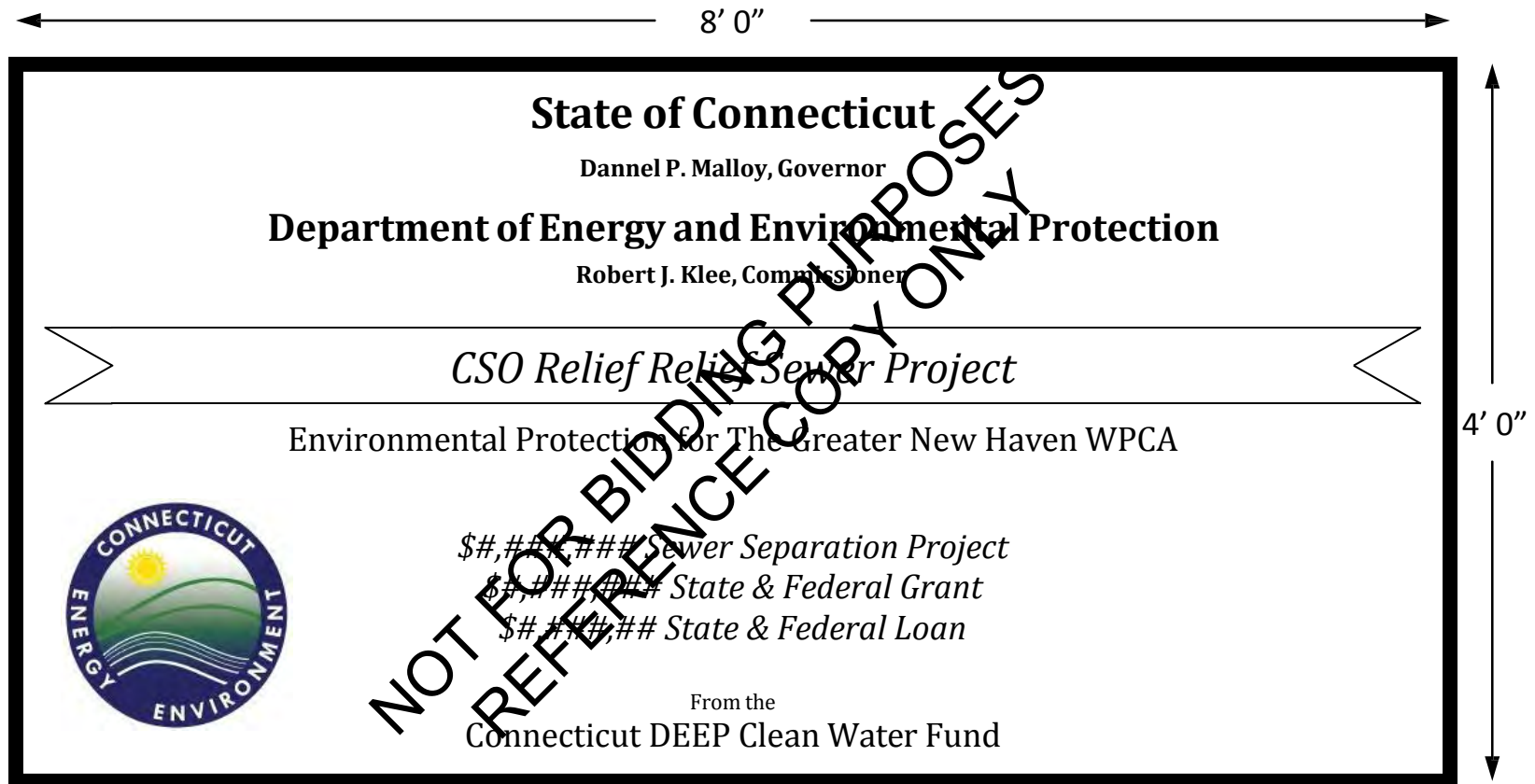
Date: _____

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Connecticut DEEP Project Sign Detail

**NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY**

CONNECTICUT CLEAN WATER FUND PROJECT SIGN



Color Scheme:
Lettering in black
Background in white
Banner in yellow

Provide adequate supports for sign as site conditions may require. Keep sign a proper distance above prevailing grade to permit public viewing.

American Iron & Steel Requirements

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY



Memorandum

To: All Connecticut Municipalities, Water Pollution Control Facilities, and Consultants

Date: May 28, 2015

Re: Revised American Iron and Steel Memorandum

The Department of Energy and Environmental Protection's (DEEP) Municipal Water Pollution Control Section has updated the American Iron and Steel (AIS) memorandum that was distributed on May 19, 2014.

On June 10, 2014, the Water Resources Reform and Development Act of 2014 (WRRDA) was signed into law by President Obama, which amended the Federal Water Pollution Control Act (FWPCA). The FWPCA section 608 extended the AIS provision that was originally scheduled to expire on September 30, 2014.

This means that AIS is now a **permanent** project requirement for all Connecticut Clean Water Fund (CWF) projects.

The effective date for the newly codified AIS provision is the date of enactment of the WRRDA, or June 10, 2014.

A recent Environmental Protection Agency (EPA) memorandum dated September 18, 2014 indicates that EPA intends to interpret the WRRDA language for the AIS requirement in the same manner as described in an earlier EPA guidance memo dated March 20, 2014. Therefore, the March 20, 2014 EPA memorandum shall still serve as the final EPA AIS guidance on how to apply the AIS requirement, and it is attached to the revised CWF memo.

The final memorandum is now available on our website at <http://www.ct.gov/dep/cwp>.

Sincerely,

George V. Hicks, P.E.
Supervising Sanitary Engineer
Bureau of Water Protection & Land Reuse



Revised Clean Water Fund Memorandum (2014-001a)

TO: All Connecticut Municipalities and Consultants

RE: Implementation of American Iron and Steel provisions on Connecticut Clean Water Fund Projects

I. PURPOSE

To provide clarification on the applicability of American Iron and Steel (AIS) provisions to construction projects funded by the Connecticut Clean Water Fund (CWF).

II. GOVERNING FEDERAL PUBLIC LAW

Section 436 of Public Law (P.L.) 113-76, Consolidated Appropriations Act, 2014.

III. APPLICABILITY

All Connecticut CWF projects must use “iron and steel products” (Section III.A) that are “produced in the United States” for construction projects. The final Environmental Protection Agency (EPA) AIS guidance memorandum dated March 20, 2014 (“final EPA AIS guidance”) on how to apply the AIS requirement is attached.

This memorandum summarizes the final EPA AIS guidance, and describes how it relates specifically to Connecticut CWF projects. Section III.C details what is required for a CWF project that is subject to the AIS provisions. Any definitions provided by the final EPA AIS guidance are included in Section IV.

Section 436 of P.L. 113-76 excludes products (Section III.B) to the AIS requirement, as well as a waiver request process to exclude products of the entire project from AIS requirements (Section III.D).

A. Applicable Iron and Steel Products

1. The AIS requirement applies to all of the following products:
 - a. Lined or unlined pipes and fittings;
 - b. Manholes covers and other “municipal castings”;
 - c. Hydrants;
 - d. Tanks;
 - e. Flanges;
 - f. Pipe clamps and restraints;
 - g. Valves;
 - h. “Structural steel”;
 - i. Reinforced precast concrete; or
 - j. “Construction materials”.

Refer to Section IV for further clarification of items b, h, and j.

2. Each project item listed in Section III.A.1 and is considered to be “primarily iron or steel”, or comprised of greater than 50% iron or “steel” as measured by cost, becomes subject to the AIS requirement.
 - a. The cost used to determine AIS applicability shall be based on the material costs, and shall include the cost to pour and cast iron and/or steel components.
 - b. The cost used to determine AIS applicability shall not include assembly cost.
3. Unlike the products listed in Section III.A.1.a – h and j, all reinforced precast concrete used in applicable products is subject to the AIS requirement, no matter how much iron or steel comprises the reinforced precast concrete. The reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. The casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.
4. “Construction materials” are any products that become permanently incorporated into the project, even if those products may be considered temporary in most instances. For example, any iron or steel sheeting or piles that are not removed after construction is completed are considered to be “construction materials” subject to the AIS requirement.

B. Excluded Products

1. The AIS requirement does not apply to any mechanical and/or electrical components, equipment and systems. Mechanical and electrical components, equipment and systems are not considered construction materials.
2. The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials, and are therefore NOT subject to the AIS requirement:
 - a. Pumps;
 - b. Motors;
 - c. Gear reducers;
 - d. Drives (including variable frequency drives (VFDs));
 - e. Electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators);
 - f. Mixers;
 - g. Gates;
 - h. Motorized screens (such as traveling screens);
 - i. Blowers/aeration equipment;
 - j. Compressors;
 - k. Meters, sensors, controls and switches;
 - l. Supervisory control and data acquisition (SCADA);
 - m. Membrane bioreactor systems;
 - n. Membrane filtration systems;
 - o. Filters, clarifiers and clarifier mechanisms;
 - p. Rakes, grinders;
 - q. Disinfection systems;
 - r. Presses (including belt presses);
 - s. Conveyors, cranes;
 - t. HVAC (excluding ductwork), water heaters, heat exchangers;
 - u. Generators;

- v. Cabinetry and housings (such as electrical boxes/enclosures);
 - w. Lighting fixtures;
 - x. Electrical conduit;
 - y. Emergency life systems;
 - z. Metal office furniture, shelving;
 - aa. Laboratory equipment, analytical instrumentation; and
 - bb. Dewatering equipment.
3. Raw materials such as iron ore, limestone, and iron/steel scrap are not covered by the AIS requirement. If any raw materials are being applied as a coating, the raw materials are similarly not covered.

C. AIS Requirements

1. For each item that meets the criteria indicated in Sections III.A, the iron and steel products contained in that item must be "produced in the United States (US)".
 - a. All manufacturing processes must take place in the US, with the exception of metallurgical processes involving the refinement of steel additives.
 - b. Manufacturing processes covered by the AIS requirement include: melting, refining, forming, rolling, drawing, refining, finishing, fabricating, coating.
 - c. In the case of reinforced precast concrete, the casting of the concrete must also occur in the US. The cement and other raw materials used in the concrete production may come from non-US sources.
 - d. Each domestic iron and steel product must remain in the US for the entire manufacturing process; otherwise, it will be considered foreign source material.
 - e. Non-iron or steel components of an iron and steel product may come from non-US sources.
2. The construction contract language contained in **Appendix 4 of the attached final EPA AIS guidance** must be included in the CWF contract documents in order to obtain CWF approval of the engineering plans and specifications.
3. Certification for AIS compliance
 - a. Certification must be provided for all items in Section III.A.
 - b. Types of Certification
 - i. Step certification process: Each handler (supplier, fabricator, manufacturer, processor, etc) of the iron and steel products certifies that their step in the process was domestically performed.
 - ii. Final manufacturer certification: Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US.
 - c. AIS compliance certification must be provided on company letterhead, in the format provided by **Appendix 5 of the attached final EPA AIS guidance**.
 - d. These certifications shall be collected and maintained by the municipality, and must be available upon request by either the EPA or the DEEP.

D. Waiver Request Process

1. A waiver from the AIS requirement may be requested for a CWF project if at least one of the following conditions is sufficiently demonstrated:
 - a. The AIS requirement will increase the cost of the overall project by more than 25 percent, as demonstrated by the inclusion of a bid alternate and backup calculations;

- b. The iron and steel products are not produced in the United States in sufficient and “reasonably available quantities” and of “satisfactory quality”, as demonstrated by soliciting proposals from at least three manufacturers; or
 - c. The AIS requirement is inconsistent with the public interest.
2. Waiver Request Format
- a. The waiver request must include a table with responses to the “Information Checklist for Waiver Request” in **Appendix 1 of the attached final EPA AIS guidance**.
 - b. Evaluation of the waiver request shall include the criteria in the “HQ Review Checklist for Waiver Request” in **Appendix 2 of the attached final EPA AIS guidance**.
 - c. Waiver requests shall be submitted to the Connecticut Department of Energy and Environmental Protection (DEEP) for initial screening.
 - d. If the DEEP determines that a waiver to the AIS requirement has been sufficiently demonstrated, the DEEP will forward the waiver request to the EPA.
3. Final Waiver Determination
- a. The waiver request shall be made available on the EPA website and the DEEP CWF webpage.
 - b. The EPA shall allow for informal public input for at least 15 days prior to making a determination.

IV. DEFINITIONS

AIS: American Iron and Steel

Assistant recipients: A borrower or grantee that receives funding from a State CWSRF program. In the case of Connecticut CWF projects, “assistance recipients” are the municipalities, as defined below.

CGS: Connecticut General Statutes

Construction materials: Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the applicable project, not including mechanical and/or electrical components, equipment and systems.

Some construction materials may overlap with what is also considered “structural steel”. This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

CWF: Connecticut Clean Water Fund

CWSRF: Clean Water State Revolving Fund

DEEP: Connecticut Department of Energy and Environmental Protection

Electrical equipment: Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

EPA: Federal Environmental Protection Agency

FWPCA: Federal Water Pollution Control Act

Final EPA AIS Guidance: This refers to the attached EPA Memorandum entitled "Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014" dated March 20, 2014.

HVAC: Heating, ventilation, and air conditioning

Municipality: Any "municipality" eligible for the CWF, as defined in Section 22a-475 of the CGS. The municipalities are the "assistance recipients" for the purposes of the AIS requirement.

Iron and Steel Products: The term "iron and steel products" means the following products are made of "primarily iron or steel": lined or unlined pipes and fittings, manholes, covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

Mechanical equipment: Mechanical equipment is typically that which has motorized parts and/or is powered by a motor.

Municipal castings: Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

- Access Hatches;
- Ballast Screen;
- Benches (Iron or Steel);
- Bollards;
- Cast Bases;
- Cast Iron Hinged Hatches, Square and Rectangular;
- Cast Iron Riser Rings;
- Catch Basin Inlets;
- Cleanout/Monument Boxes;
- Construction Covers and Frames;
- Curb and Corner Guards;
- Curb Openings;
- Detectable Warning Plates;
- Downspout Shoes (Boot, Inlet);
- Drainage Grates, Frames and Curb Inlets;
- Inlets;
- Junction Boxes;
- Lampposts;
- Manhole Covers, Rings and Frames, Risers;
- Meter Boxes;
- Service Boxes;
- Steel Hinged Hatches, Square and Rectangular;
- Steel Riser Rings;

- Trash receptacles;
- Tree Grates;
- Tree Guards;
- Trench Grates; and
- Valve Boxes, Covers and Risers.

Primarily Iron or Steel: To be considered “primarily iron or steel”, the product must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

P.L.: Public Law

Production in the US: For the purposes of the AIS requirement, “production in the US” of the iron or steel used in an applicable product requires that all manufacturing processes must take place in the US, except metallurgical processes involving refinement of steel additives.

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

SCADA: Supervisory control and data acquisition

Steel: An alloy that includes at least 50 percent iron, between 0.02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel includes carbon steel, alloy steel, stainless steel, tool steel, and other specialty steels.

Step Certification: A step certification is a process under which each handler (supplier, fabricator, manufacturer, processor, etc.) of the iron and steel products certifies that their step in the process was domestically performed.

Structural steel: Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zeeks. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes. Some structural steel may overlap with what is also considered “construction materials” (see definition above).

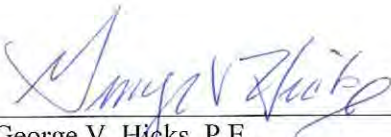
RCSA: Regulations of the Connecticut State Agencies

US: United States

VFDs: Variable frequency drives

WRRDA: Water Resources Reform and Development Act of 2014

5/28/2015
Date


George V. Hicks, P.E.
Supervising Sanitary Engineer
Bureau of Water Protection & Land Reuse

Attachment: EPA Memorandum: "Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014" dated March 20, 2014.

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

American Iron and Steel Provisions - Bidder Certification

The Bidder ("Contractor") acknowledges to and for the benefit of the Greater New Haven Water Pollution Control Authority ("Purchaser") and the State of Connecticut ("State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure, including without limitation any impairment or loss of funding, whether in whole or in part from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Please Print

Bidder (Contractor):

By:

Name of Contractor (Company)

Signature

Address

Print Name

City/State/Zip Code

Date



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76,
Consolidated Appropriations Act, 2014

FROM: Andrew D. Sawyers, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the "Administrator") finds that

- (1) applying subsection (a) would be inconsistent with the public interest;
- (2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
- (3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

- 5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?**

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

- 6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?**

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

- 7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project where the remaining phases will be funded by SRF assistance in the future?**

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

- 8) What if a project has split funding from a non-SRF source?**

Many States intend to fund projects with "split" funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger

project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1432 of the Safe Drinking Water Act (42 U.S.C. 300j-12).

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

- Lined or unlined pipes or fittings;
- Manhole Covers;
- Municipal Castings (defined in more detail below);
- Hydrants;
- Tanks;
- Flanges;
- Pipe clamps and restraints;
- Valves;
- Structural steel (defined in more detail below);
- Reinforced precast concrete; and
- Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both questions is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the

material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and

data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-

888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: <http://www.epa.gov/oig/hotline.htm>.

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to either of two email addresses. For CWSRF waiver requests, please send the application to: cwsrfwaiver@epa.gov. For DWSRF waiver requests, please send the application to: dwsrfwaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aic/requirement.cfm
2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.
3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Appendix 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
<p>General</p> <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor 		
<p>Cost Waiver Requests</p> <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractor to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers 		
<p>Availability Waiver Requests</p> <ul style="list-style-type: none"> • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: <ul style="list-style-type: none"> — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects? 		

Appendix 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
Cost Waiver Requests				
• Does the waiver request include the following information?				
— Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products				
— Relevant excerpts from the bid documents used by the contractors to complete the comparison				
— A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market				
• Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?				
Availability Waiver Requests				
• Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested?				
— Supplier information or other documentation indicating availability/delivery date for materials				
— Project schedule				
— Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials				
• Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers?				
• Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information)				
• Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested?				
Examples include:				
— Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State				
— Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States				
— Correspondence with construction trade associations indicating the non-availability of the materials				
• Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?				

Appendix 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENT MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Appendix 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _____ (“Purchaser”) and the _____ (the “State”) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel,” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including, without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Appendix 5: Sample Certifications

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

TABLE OF CONTENTS

56. MODIFICATIONS TO THE GNHWPCA SPECIFICATIONS 101 THRU 109

56A. Modification to Item 102 "Bidding Requirements and Conditions"SS-28

56B. Modification to Item 103 "Award and Execution of Contract"SS-28

56C. Modification to Item 105 "Control of the Work"SS-28

56D. Modification to Item 107 "Legal Relations and Responsibility to Public"SS-30

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

56. MODIFICATIONS TO THE GNHWPCA SPECIFICATIONS 101 THRU 109

The Contractor is hereby notified of the following modifications to the GNHWPCA Standard Specifications, which shall be made a part of the Contract Documents and shall be strictly adhered to.

56A. Modification to Item 102 "Bidding Requirements and Conditions"

Delete the first paragraph of Section 102-07 interpretations and addenda and **Replace** with the following:

"All questions about the meaning or intent of the Contract Documents shall be submitted to the Authority at Engineering@GNHWPCA.com, and any other parties identified in the Special Specifications and Notes, in writing. In order to receive consideration, questions must be received by Noon Local Time, at least Ten (10) Calendar Days prior to the date fixed for the receipt of bids. Any interpretations of questions so raised which in the opinion of the Authority require interpretations, will be issued by Addenda by email to all parties recorded by the Authority ~~on~~ having obtained the proposal blank. Addenda will be sent via email no later than Five (5) Calendar Days prior to the date fixed for Opening of Bids. The Authority will not be responsible for oral interpretations or clarifications which anyone presumes to make on its behalf."

56B. Modification to Item 103 "Award and Execution of Contract"

Delete the first paragraph of Section 103-01 award if contract and **Replace** with the following:

"Award of the Contract will be made only to the lowest responsible Bidder as will best promote the public interest. The Greater New Haven Water Pollution Control Authority reserves the right to waive informalities and minor defects of reject any and/or all bids."

56C. Modification to Item 105 "Control of the Work"

Under Section 105 of the General Provisions of the Standard Specifications: **Delete** the entire § 105-08 COOPERATION BY THE CONTRACTOR and **Substitute** the following subsection:

§ 105-08 COOPERATION BY THE CONTRACTOR

The Contractor shall give its constant and personal attention to the Work while it is in progress, or they shall place it in charge of one or more competent and reliable English speaking resident superintendents, satisfactory to the Authority and the Engineer, who shall be on site at all times during working hours with full authority to act for him and who shall have direct, hands-on supervision of the actual construction work in the field. The superintendent shall not be a foreman, operator, laborer, or anyone performing the actual work. The superintendent shall have a minimum of ten years' experience as superintendent on projects of similar size and complexity. All communications given to or received from the superintendent shall be binding on the Contractor. The Contractor shall also provide an adequate staff for the proper coordination and expediting of its work.

The Contractor shall, at all times, employ labor and equipment, which shall be sufficient to prosecute the several classes of Work required on this project to full completion in the manner and time specified. All workmen must have sufficient skill and experience to properly perform the Work assigned to them. All workmen engaged on special or skilled Work shall have had sufficient experience in such Work to properly and satisfactorily perform it and to operate the equipment

involved.

Any person employed by the Contractor, whom the Engineer may deem incompetent or unfit to perform the Work, shall be at once discharged, and shall not be again employed on an Authority project. In case the Contractor disagrees with the Engineer regarding the discharge of such employees, the matter may be reviewed by the Authority, and its decision shall be accepted as final.

Under Section 105 of the General Provisions of the Standard Specifications: **Delete** the entire § 105-14 DISPUTED WORK and **Substitute** the following subsection:

§ 105-14 DISPUTED WORK

If the Contractor is of the opinion that any Work ordered to be done as Contract Work by the Engineer is Extra Work, and not Contract Work, or that any order of the Engineer violates the provisions of the Contract, the Contractor shall promptly notify the Authority and the Engineer in writing of their contentions with respect thereto and the Authority shall make a finding thereon which shall be accepted by all parties as final.

All disputes arising under this Contract, or its interpretation, whether involving law or fact, or both, or Extra Work, and all claims for alleged breach of Contract, shall within ten (10) days of commencement of the dispute be presented by the Contractor to the Authority for a decision. All papers pertaining to claims shall be filed in quadruplicate. Such notice need not detail the amount of the claim, but shall state the facts surrounding the claim in sufficient detail to identify the claim, together with its character and scope. Any claim not presented within the time limit specified within this paragraph shall be deemed to have been waived, except that if the claim is of a continuing character and notice of the claim is not given within ten (10) days of commencement, the claim will be considered only for a period commencing ten (10) days prior to the receipt by the Authority of Notice thereof.

The Work shall, in the meantime, be progressed by the Contractor as required and ordered. During the progress of such disputed Work, the Contractor and Engineer shall keep daily records and make reports of all labor, material, and equipment used in connection with such Work and the cost thereof as specified in 109-04 "EXTRA AND FORCE ACCOUNT WORK".

The Contractor shall submit in detail its claim and its proof thereof. Each decision by the Authority will be in writing.

If the Contractor does not agree with any decision of the Authority, it shall in no case allow the dispute to delay the Work, but shall notify the Authority promptly that it is proceeding with the Work under protest and it may then except the matter in question from the final release.

If the Engineer determines that the work in question is Contract Work, and not Extra Work, and that the order complained of is proper, they shall direct the Contractor to continue the disputed work and the Contractor must promptly comply. The Contractor's right to file a claim for extra compensation or damages will not be affected in any way by their complying with the directions of the Engineer, provided the Contractor continues to keep and furnish the Engineer with Force Account Reports as specified in 109-04.

If the Engineer determines that such Work is Extra Work, and not Contract Work, or that the order

complained of is not proper, then the Engineer shall have prepared, if necessary, and an Order on Contract covering such Work. This will be done as soon after the determination as is practical. Adjustments in Contract Items, or the addition of new Items to the Contract necessitated by any such determination, may be made up until the time Final Agreement is submitted for payment provided that all the requirements of this subsection, "Disputed Work", and the Section entitled, § **104-03 Contingencies, Extra Work, Deductions**, are complied with.

In the event the Contractor fails to furnish force account reports, such failure shall constitute a waiver of any claim of payment for disputed Work, other than for payment at the Contractor unit prices for the Work performed.

Under Section 105 of the General Provisions of the Standard Specifications: **Add** the following subsection:

§ **105-19 COMMUNICATIONS**

All notices, demands, requests, instructions, approvals, proposals, changes and claims must be in writing.

Any notice or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Contract, or at other such office as the Contractor may from time to time designate in writing to the Authority, or if deposited in the United States mail in a sealed, postage prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

All papers required to be delivered to the Authority shall, unless otherwise specified in writing, be delivered to Authority's Executive Director or his designated appointee. Any notice to, or demand upon, the Authority shall be sufficiently given if so delivered, or if received in the United States mail in a sealed, postage prepaid envelope, or if transmitted to said Authority at such address with charges prepaid by any telegraph company, or if delivered by any of the foregoing means to such other representative of the Authority, or to such other address as the Authority may subsequently specify in writing to the Contractor for such purpose. Any such notice shall be deemed to have been given as of the time of actual delivery, or in the case of mailing, when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt as the case may be.

56D. Modification to Item 107 "Legal Relations and Responsibility to Public"

Under Section 107 of the General Provisions of the Standard Specifications: **Replace** the subsection in its entirety with the following:

§ **107-06 INSURANCE**

Before the Contract is executed and prior to commencement of Work thereunder, the Contractor will be required to take out and maintain at its sole cost and expense insurance of the types and amounts specified herein and to file with the Authority a certificate of insurance satisfactory to the Authority and in an acceptable form. The Contractor shall carry insurance at a minimum in accordance with the following requirements:

1. **WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE:** With respect to work that the Contractor performs and performed for the Contractor by subcontractors, the Contractor shall carry Worker's Compensation and Employer's Liability Insurance in the minimum amount of Five Hundred Thousand Dollars (\$500,000) each accident for bodily injury and Five Hundred Thousand Dollars (\$500,000) each employee for bodily injury by disease with a Five Hundred Thousand Dollar (\$500,000) policy limit by disease.
2. **COMMERCIAL GENERAL LIABILITY INSURANCE:** With respect to the Contractor's work and work performed for the Contractor by its subcontractors, the Contractor shall carry Commercial General Liability insurance on an ISO form CG 00 01 providing the following limits:

One Million Dollars (1,000,000) Each Occurrence
Two Million Dollars (2,000,000) General Aggregate – Applicable Per Project
Two Million Dollars (2,000,000) Products/Completed Operations Aggregate
One Million Dollars (1,000,000) Personal/Advertising Injury Per Person
Organization

The policy shall be written on an occurrence basis covering liability arising from premises, operations, independent contractors, product/completed operations, personal and advertising injury liability, and liability assumed under an insured contract. There shall be no modification limiting the scope of coverage for liability arising from explosion, collapse or underground hazards.

3. **BUSINESS AUTOMOBILE LIABILITY INSURANCE:** The operation of all motor vehicles, including those owned, hired, leased or borrowed and non-owned, used in connection with the Work shall be covered by Automobile Liability insurance in the amount of not less than One Million Dollars (\$1,000,000) combined single limit each accident.

4. **OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY INSURANCE FOR AND IN THE NAME OF THE GREATER NEW HAVEN WATER POLLUTION CONTROL AUTHORITY:** With respect to the work the Contractor performs, the Contractor shall carry for and in behalf of the Authority:

Protective Liability insurance providing for a total limit of not less than One Million Dollars (\$1,000,000) each occurrence, One Million Dollars (\$1,000,000) in the aggregate.

Unless requested otherwise by the Authority, the Contractor and its insurer shall waive governmental immunity as defense and shall not use the defense of governmental immunity in the adjustment of claims or in the defense of any suit brought against the Authority, its officers or employees.

The Contractor shall assume and pay all costs and billings for premiums and audit charges earned and payable under the required insurance.

5. **RAILROAD'S PROTECTIVE PUBLIC LIABILITY AND PROPERTY DAMAGE LIABILITY INSURANCE:** When the Project involves Work on, over or under the right of way of any railroad company, and whether or not such railroad has scheduled passenger service, the Contractor shall carry, with respect to the operations it performs and those for and in behalf of the railroad company, Railroad Protective Public Liability insurance providing for a limit as required by the Railroad Company.
6. **UMBRELLA EXCESS LIABILITY INSURANCE:** This policy is on a follow form basis in the minimum amount of Ten Million Dollars (\$10,000,000) excess of the Employer's Liability,

Commercial General Liability and Business Automobile Liability coverages described herein.

7. **EQUIPMENT AND INSTALLATION FLOATER:** The Contractor shall provide an equipment and installation floater covering Contractor's tools and also materials not accepted by the Authority.
8. **TERMINATION OR CHANGE OF INSURANCE:** Each insurance policy shall be endorsed to provide that the insurance company shall notify the Authority by certified mail at least thirty (30) days in advance of termination or policy non-renewal.

The Contractor shall at its own expense, keep all the required insurance coverage in continuous effect until the date the Authority indicates the termination of the Contractor's responsibility. Such coverage shall be written on an "occurrence" basis and shall provide that the Commercial General Liability and Umbrella Liability coverages will be renewed for three (3) years after completion of the Work. This provision survives the termination of this contract.

9. **COMPENSATION:** The Contractor shall be fully responsible for all expenses to maintain the coverage required herein. There shall be no direct compensation allowed the Contractor on account of any premium or other charge necessary to take out and keep in effect all insurance or bonds, but the costs thereof shall be considered included in the general cost of the Work.
10. **DEDUCTIBLE/SIR CLAUSE:** Insurance contracts required under this section shall not contain a deductible or self-insured retention clause. In the event that such a deductible clause is an unavoidable part of any policy, the Contractor shall be responsible for payment of the full amount of such deductible or self-insured retention.
11. **ADDITIONAL INSURED:** All insurance policies, except for workers' compensation, shall be endorsed to include the Greater New Haven Water Pollution Control Authority, the State of Connecticut, the City of New Haven and its officers, directors, agents and employees as additional insureds (collectively "Indemnitees") covered for liability arising out of any ongoing and completed operations using additional insured endorsement being on a CG 20 10 and CG 20 37 or their equivalent.
12. **WAIVERS OF SUBROGATION:** All insurance policies shall contain express waivers by the insurance company of its right of subrogation against all Indemnitees.
13. **PRIMARY:** The Commercial General Liability policy and the Umbrella Liability policy shall be primary and non-contributory meaning each policy shall be amended to specifically state such insurance will be considered primary and will not seek contribution with respect to any and all other insurance that may be available to Authority and any other person required to be named as additional insured under this Contract.
14. **EVIDENCE:** This Contractor will furnish the Contractor's certificates of insurance, and copies of insurance policies, forms and endorsements as requested.

TABLE OF CONTENTS

57. MODIFICATIONS TO THE GNHWPCA SPECIFICATIONS 201 THRU 1210

57A. Modification to Item 205 "Trench Excavation and Backfill":	SS-34
57B. Modification to Item 210 "Temporary Soil Erosion and Water Pollution Control"	SS-35
57C. Modification to Item 407 "Bituminous Concrete Trench Repair":	SS-36
57D. Modification to Item 512 "Sanitary Sewer":	SS-37
57E. Modification to Item 516 "Sanitary Sewer Flow Control and Bypass Pumping"	SS-41
57F. Modification to Item 518 "Sanitary Sewer Cleaning":	SS-43
57G. Modification to Item 520 "Sanitary Sewer Cured-in-place Pipe Lining"	SS-43
57H. Modification to Item 969 "Engineers Field Office":	SS-60
57I. Modification to Item 971 "Maintenance and Protection of Traffic":	SS-60
57J. Modification to Item 985 "Project Survey and Stakeout":	SS-64
57K. Modification to Item 1208 "Sign Face -Sheet Aluminum":	SS-65
57L. Modification to Item 1209 "Painted Pavement Markings":	SS-66
57M. Modification to Item 1210 "Epoxy Resin Pavement Markings":	SS-67

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

57. MODIFICATIONS TO THE GNHWPCA SPECIFICATIONS 201 THRU 1210

The Contractor is hereby notified of the following modifications to the Greater New Haven WPCA Standard Technical Specifications, which shall be made a part of the Contract Documents and shall be strictly adhered to. The following is a list of the Specification Items modified below:

57.A Modification to Item 205 "Trench Excavation and Backfill":

Under the "Description" heading of this Item: After the first paragraph, **Add** the following:

"For this Contract, there shall be no differentiation between trench excavation and structure excavation. All excavation for sanitary or storm structures shall be covered under this Item 205 as Trench Excavation as paid according to the appropriate pay item in the Bid Proposal, unless otherwise modified."

"The Contractor shall be aware that there is a possibility that he may be asked to assist the utility companies by providing trench or structure excavation, backfill and compaction for their relocation/replacement work required by this project. Utility excavation, backfill and compaction shall be paid to the Contractor under the item "Trench Excavation" included in the Bid Proposal."

Under the "Construction Details" heading of the Item: Immediately after the last paragraph, **Insert** the following three (3) paragraphs:

"The Contractor shall comply with the compaction requirements listed in Item 202 Excavation and Embankment paragraph entitled, "Construction Details", Subparagraph 6, entitled "Compaction" of the Standard Specifications."

"Suitable backfill for trenches shall be any excavated material determined to be acceptable by the Engineer. It shall not be any of the following: pavement (bituminous or concrete), rocks, boulders, pipe, conduit, metal, brick, cinders, ash, refuse, debris, stones greater than 6" in any dimension, peat, muck, silt or other organic material, broken concrete and rebar and frozen material. Select backfill shall be defined as suitable backfill as determined by the Engineer and shall have no cobbles larger than 2 inches in size."

"All trenches and structure excavations shall be saw cut by the Contractor prior to the start of excavation. The existing pavement may be both bituminous and concrete. The Contractor shall take the appropriate measures to protect the edges of each trench excavation from damage. Any damaged edges shall be saw cut again by the Contractor prior to placement of temporary or permanent pavement to the satisfaction of the Engineer. There shall be no separate measurement or payment for trench/structure excavation sawcutting of bituminous or concrete pavement, sidewalks, driveways, etc. The cost shall be included in other Contract bid prices."

Under the "Trench and Excavation Support Systems" heading of this Item: Immediately after the last paragraph, **Insert** the following paragraph:

"To minimize the potential impacts on the buckeye jet fuel pipeline, which is to remain in place and use, the Contractor shall provide appropriate excavation support systems ."

Jetting will not be allowed without the specific approval of the Engineer. The Contractor will exercise caution while using Hoe-Pak equipment due to adjacent utilities. The contractor shall comply by the requirements of Appendix D while excavating adjacent to Buckeye Pipeline. The use of vibratory rollers will not be allowed within trenches.

"The Contractor shall support and protect all existing underground utilities exposed when trenching during the installation of sanitary main and structures. The method of support shall be designed subject to the approval of the Engineer. There shall be no separate measurement or payment for this work, but the cost shall be included in other Contract bid items."

Under the "Payment" heading of the Item: **Delete** the sixth paragraph and **Insert** the following:

" Test pits performed by the vacuum method shall be paid for per each such test pit performed (typical 12"x12" size and up to 12-feet deep), which price and payment shall constitute full compensation for furnishing all labor, material, tools and equipment required to complete the work and to gather the required information similar to the data required for traditional methods, complete and accepted by the Engineer."

Under the "Payment" heading of the Item: **Delete** the eighth paragraph and **Insert** the following:

"No additional payment will be made for sawcutting or removal of bituminous pavement, concrete or stone curbing or bituminous or concrete sidewalk"

Under the "Payment" heading of this Item: After the last pay item, **Insert** the following:

Item Number	Pay Item	Pay Unit
205.02	Test Pit by Vacuum Method, Complete	Each

There will be no separate payment for Backfill and Compaction, the cost of which shall be included in the unit price bid for Trench Excavation and other items of work.

57B. Modification to Item 210 "Temporary Soil Erosion and Water Pollution Control":

Under the "Description" heading of this Item: After the last paragraph, **Insert** the following:

"A minimum of once a week, preferably on Fridays, and when directed by the Engineer, the Contractor shall employ the use of a mechanical street sweeper augmented with water to sweep the streets within the Project area and remove the dust, silt and other debris from the paved surfaces."

"The Contractor must perform the construction in accordance with the applicable sections of the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. The Contractor will have to register for a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities."

Under the "Materials" heading of this Item: Immediately after the last paragraph, **Insert** the following two (2) paragraphs:

"Filter devices, such as Silt Sack® by ACF Environmental, Dandy Curb Sack manufactured by Dandy Products, Inc., or equivalent, shall be used to collect silt and debris in existing and

proposed catch basins. Hay bales and silt fence are not acceptable.”

“Other materials, which are acceptable for use on this project are hay bales, silt fence, tracking pads and any other materials acceptable to the Engineer. All materials shall conform to the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.”

Under the "Construction Details" heading of this Item: Immediately after the third paragraph under "Schedule of Work", **Insert** the following:

“The Contractor shall inspect all soil erosion and water pollution control devices on at least a weekly basis and within 24 hours after every rainfall event greater than 0.2 inches. Silt Sacks® and other filtration devices shall be cleaned/changed on the manufacturer's recommended schedule or as directed by the Engineer.”

Under the "Construction Details" heading of this Item: After the last paragraph, **Add** the following:

"The cost for the use of street sweeping equipment, including the cost to store or rent it and the labor to operate it, shall be included in the price bid under "Item 210 - Temporary soil erosion and water pollution control"."

57C. Modification to Item 407 "Bituminous Concrete Trench Repair":

Under the "Description" heading of this Item: After the first paragraph, **Add** the following paragraphs:

"The Contractor is notified that both temporary and permanent trench restoration is required as part of this Contract. The Contractor shall perform temporary bituminous concrete trench repair where shown on the plans or where directed by the Engineer to maintain pedestrian/vehicular access and to allow for trench settlement. Each trench excavation shall have a minimum of 60 days for settlement before permanent pavement / sidewalk / driveway is installed. Permanent trench restoration will be required at the locations shown on the plans and where directed by the Engineer. The plans also show areas of the project to be milled and overlaid after trench restoration is final. The Contractor shall be responsible for the resetting of any new or existing curb boxes, valve boxes, catch basin and manholes, and other utility structures within the new pavement areas, including sidewalk and driveway areas, to final grade. The cost of the resetting to final pavement grade shall not be measured separately for payment, but shall be included in other Contract bid items."

"Unless otherwise directed by the Engineer, temporary bituminous concrete shall be used as a temporary surface for sidewalk and driveways when necessary to maintain access. Determination of its use will be made by the Engineer. All use of temporary pavement for damaged areas beyond the allowable trench limits described in the Contract Documents shall be made at the Contractor's cost."

"The Contractor will be responsible for placing a permanent utility trench pavement repair in all utility relocation trenches performed by the respective utility company. The Contractor shall be aware that there is a possibility that he may be asked to assist the utility companies for placing a temporary pavement patch for their relocation/replacement work. The costs for temporary pavement repair for third party utility relocation shall be included under the item "Temporary Pavement Repair - Roadways / Driveways 2-in Class 2" included in the Bid Proposal."

During permanent trench repair, the Contractor for this Project shall remove that temporary patch, saw cut any damaged edges of pavement, to the Engineer's satisfaction, and install the required permanent pavement section to match the details on the drawings during the final pavement operations."

Under the "Construction Details" heading of this Item: After the last paragraph before "Temporary Pavement", **Insert** the following paragraphs:

"When a skim coat is required, it shall extend no less than two feet (2') on either side of the temporary and/or permanent trench pavement as directed by the Engineer. The skim coat edge shall be in a neat line and feathered into the existing pavement so as to make a smooth transition."

"Once the skim coat is installed, the Contractor shall stripe and mark all intersections, crossings, school areas, centerlines, etc. in the newly paved sections; those temporary markings shall be painted in accordance with the City's Traffic and Parking requirements."

"Unless otherwise approved by the Engineer, no permanent pavement shall be installed from December 1st to April 1st."

"Prior to placing an overlay, all milled bituminous surfaces shall receive a tack coat immediately prior to placing the overlay. All bituminous surfaces which have been in place longer than five (5) calendar days, shall receive a tack coat. The tack coat material shall meet the requirements of CONNDOT Form 816, Section M.04.01 and be placed at the rate of 0.05 to 0.15 gallons per square yard. The tack coat will not be paid for separately, but included in the price bid for the various bituminous pavement pay items."

Under the "Construction Details" heading of this Item: Under "Temporary Pavement", **Delete** the third sentence and **Replace** it with the following sentences:

"During the paving season, Class 2 mix shall be used. The use of a minimum 2-inch thickness of "Hybrid Asphalt" (such as Wesifo, QPR High Performance Pavement Repair, or equivalent) to temporarily seal open trench excavations, or as a skim coat, may be used with the approval of the Engineer."

Under the "Measurement" heading of this Item: **Remove** the first paragraph and **Replace** it with the following:

"The work will be measured for payment by the number of square yards within the payment limits shown on the plans for the pay items shown below."

"These bids should reflect that when the processed aggregate is placed there is no separate measurement or payment for extra processed aggregate needed to make up for any lost in the removal of the temporary pavement."

Under the "Measurement" heading of this Item: **Remove** the third paragraph and **Replace** it with the following:

"The maximum pay limits shall conform to the details shown on the Contract Drawings."

Under the "Payment" heading of this Item: At the end of the third paragraph, **Insert** the following

paragraphs:

"The pay item for "Temporary Pavements for streets and driveways 2-in class 2 shall include the cost for a compacted backfill base. The pay item for all permanent trench repairs shall include excavation for placement of pavement and the furnishing and placing of all courses of pavement depths as shown in the respective pavement details. The installation of permanent driveways and sidewalks shall be under Item 927."

"All pavement unit prices bid shall include the cost for saw cutting and to reset all existing or new grates, covers and frames to meet final grade whether in trench repair or overlay areas."

Under the "Payment" heading of this Item: After the last paragraph, **Remove** the pay items and **Insert** the following:

Item Number	Pay Item	Pay Unit
407.1	Temporary Pavement Repair - Roadways / Driveways 2" Class 2	SY
407.2	Permanent Trench Repair 1-1/2" Bituminous concrete class 2	SY
407.3	Permanent Trench Repair 1-1/2" Bituminous concrete class 1	SY
407.4	Permanent Trench Repair 6" Bituminous concrete class 4	SY

57D. Modification to Item 512 "Sanitary Sewer":

The following modifications are made to Item 512 of the Standard Specifications:

Under the "Materials" heading of this Item: III. Polyvinyl Chloride Pipe (PVC): **Replace** with the following:

- a. The polyvinyl chloride pipe and fittings, including also those required for stubs, shall conform to one of the following:
 - i. ASTM D3034 for diameters 4-inch through 15-inch
 - ii. ASTM F679 (Wall thickness T- 1) for diameters 18-inch through 27-inch
 - iii. ASTM F949 for 4 to 36 inch diameter polyvinyl chloride (PVC) pipe with a smooth interior.
 - iv. Closed profile pipe conforming to ASTM F1803 for diameters 18-inches through 48-inches.
 - v. STM 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, as manufactured by Diamond, Ipex USA, National Pipe, North American Pipe Corporation, Royal Pipe Systems or equal. 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.

Under the "Materials" heading of this Item: III. Polyvinyl Chloride Pipe (PVC) under A. Lengths and Joints **Replace** first sentence with the following:

"Pipe lengths shall not exceed 10 feet."

Under the "Construction Details" heading of this Item: Immediately after the last paragraph of 1. Pipe Laying: **Add** the following:

"The Contractor shall support and protect all existing underground utilities exposed when trenching during the installation of sanitary main and lateral piping and/or structures. The method of support shall be subject to the approval of the Engineer. There shall be no separate measurement or payment for this work, but the cost shall be included in other Contract bid items."

Under the "Construction Details" heading of this Item: Immediately after the last paragraph under "8.B. Low Pressure Air Testing", **Add** the following paragraphs:

"When sanitary sewers are active and air testing between manholes is not possible, leakage testing shall be performed by isolating and testing each pipe joint in accordance with the following:

Testing of Active Sewers

- a) Application: This technique for sewer pipe joint testing is used to test the integrity of individual pipe joints after installation and before or after existing sewage flows are re-established. This test shall be utilized when sanitary sewer installation includes connections to existing live sewers and/or service laterals.
- b) Test Medium: A fluid (maximum viscosity of 2 centipoise) shall be used as the test medium. Both liquid (usually water) and air are acceptable but the test procedure is different for each.
- c) Equipment: The basic equipment used shall consist of a television camera, joint testing device (such as a packer) and test monitoring equipment. The equipment shall be constructed in such a way as to provide means for introducing the test medium, under pressure, into the VOID area created by the expanded ends of the joint-testing device and means for continuously measuring the actual static pressure of the test medium at and within the VOID area only.
- d) VOID pressure data shall be transmitted electronically from the VOID to the monitoring equipment. Example: via a TV picture of a pressure gage located at the VOID, or via an electrical pressure transducer located at the VOID.
- e) All test monitoring shall be above ground and in a location to allow for simultaneous and continuous observation of the television monitor and test monitoring equipment by the Engineer.
- f) Test Procedure: Each sewer pipe joint which is not visibly leaking shall be individually

tested at a test pressure equal to 2 psi per vertical foot of pipe depth (not exceeding a test pressure of 10 psi) in accordance with one of the following procedures:

1. Air Test Procedure:

- a. The testing device shall be positioned within the line in such a manner as to straddle the pipe joint to be tested.
- b. The testing device ends (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 pressure to contain a minimum of 10 psi within the VOID without leakage past the expanded ends.
- c. 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. If the required test pressure cannot be developed (due to joint leakage), the joint will have failed the test and shall be sealed as specified elsewhere.
- d. After the VOID pressure is observed to be equal to or greater than the required test pressure, the airflow 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 repaired as directed by the Engineer.

2. Control Tests: Prior to starting the pipe joint testing phase of the work, a two-part control test shall be performed as follows:

- a. 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.
- b. 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, so 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.

3. Test Records: During the joint testing work, records shall be kept which include:

- a. Identification of the manhole section tested.
- b. The test pressure used.
- c. Location (footage) of each joint tested.
- d. A statement indicating the test results (passed or failed) for each joint tested.
- e. A copy of the video record shall be submitted to the Authority.

Under the "Construction Details" heading of this Item: **Replace** the first sentence under "8.D. Inspection by Closed Circuit TV Camera" with the following:

"All newly completed sanitary sewers shall be cleaned in accordance with Item 518 and televised in accordance with Item 522 of the Standard Specifications. This work shall not be measured for payment, but the cost shall be included in the unit price bid for the various sewer pipes."

Under the "Measurement and Payment" heading of this Item: **Replace** sub-paragraph 7. with the following:

"Wyes and Tees will not be measured for payment, but the cost of furnishing and installing the wye / tee and plug, if necessary, will be included in the main line unit price bid."

Under the "Measurement and Payment" heading of this Item: In sub-paragraph 8. and at the end of the sentence, **Add** the following sentence:

"Backfill and compaction shall not be measured or paid separately, but the cost shall be considered included in the unit price bid in other Contract bid items."

Under the "Measurement and Payment" heading of this Item: Immediately after the last paragraph, **Insert** the following:

"10. There shall be no separate measurement or payment for the reconnection of new or existing sanitary sewer laterals to a new main pipe installed by open cut. The cost shall be included in the main line unit price bid."

57E. Modification to Item 516 "Sanitary Sewer Flow Control and Bypass Pumping":

Under the "Description" heading of this Item: Immediately after the last paragraph, **Insert** the following paragraphs:

"Should sewer laterals not shown on the Contract Drawings be discovered by the Contractor, the cost for abandoning, bypassing and reconnecting them shall be measured and paid at the same unit prices bid for sewer laterals shown on the drawings."

"The Contractor also shall control flows in all sanitary sewer systems in conjunction with the installation of the proposed piping and structures."

Under the "Materials and Equipment" heading of this Item: Immediately after the last paragraph, **Insert** the following:

"All grinder and other pumps or generators used for dewatering and for maintenance (bypass) of

flow shall be silenced to the maximum extent possible « 100 dBA) during the workday, unless otherwise approved by the Engineer. For bypass operations from 10:00 PM to 7:00 AM, all equipment running continuously, or periodically, must be critically silenced and not exceed a maximum decibel level of 35 dBA. Silencing methods shall include upgraded mufflers, more efficient pump design, air operated pumps, sound shield enclosures, etc. The Contractor shall submit his proposed pumping equipment and silencing methods and anticipated decibel levels to the Engineer for approval."

Under the "Construction Details" heading of this Item: Immediately after paragraph 6. of A. Submittals, **Insert** the following:

"7. The Contractor shall provide a minimum of 48 hours written notification to the Property Owner and the Authority prior to any bypassing operation."

Under the "C. Prosecution of Work" heading of this Item: **Add** the following to "1. Flow Control and Bypass Pumping . "

- e. For the installation of CIPP liner on the northern 1,000 LF section (between the Quinnipiac Ave forcemain discharge manhole and the proposed new drop manhole), the contractor may utilize the existing pumps in the Quinnipiac Ave Pump Station. The contractor shall notify GNHWPCA atleast 2 weeks in advance if he intends to use the Quinnipiac pumps for bypass operations. The contractor shall note that the existing cast iron forcemain is very old and he shall be responsible for any damage to the forcemain during bypass connection. The contractor shall repair or replace the affected section at his own expense immediately before proceeding with any additional lining work.
- f. The contractor shall submit detailed signed and sealed calculations and connection details by a licensed professional for review and approval prior to commencing work, and follow all procedures outlined in the submittals section of this specification.

Under the "C. Prosecution of Work" heading of this Item: **Add** the following to "3. Pumping and Bypassing ."

- g) The flows along Quinnipiac Trunk sewer under various anticipated conditions are as follows:

BYPASS PUMPING FLOWS (MGD)			
LOCATION	AVERAGE DRY WEATHER FLOW	PEAK DRY WEATHER FLOW	2 YEAR - 6 HOUR STORM
NICOLL/MITCHELL	4.50	7.00	12.00
QUINNIPIAC TRUNK SEWER	2.00	3.50	5.44

57F. Modification to Item 518 " Sanitary Sewer Cleaning":

Under the "Measurement and Payment" section **Add** the following:

Debris/Obstruction Removal

The work shall be paid at the contract unit price for debris or obstructions removed at each location as identified in the plans during CCTV inspection in design phase. The approximate locations of the debris or obstructions are identified in the contract drawings. The contractor shall note that the locations of debris or obstructions are approximate and may have been shifted. The contractor shall verify the exact location of the obstructions during pre-construction CCTV inspections. The price shall include all materials, labor, tools and equipment incidental and necessary for removal and disposal of debris or obstructions by open-cut excavation or trenchless techniques per each location based on the contractors chosen means and methods. The price shall be included under the following bid item

Item Number	Pay Item	Pay Unit
518.4	Debris or Obstruction Removal	Per Location

57G. Modification to Item 520 "Sanitary Sewer Cured-in-place Pipe Lining"

Replace Item 520 in its entirety with the following:

ITEM 520 SANITARY SEWER CURED-IN-PLACE PIPE LINING

DESCRIPTION:

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

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

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

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

REFERENCES:

1. American Society of Testing and Materials (ASTM)

- C 581 Standard Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass Fiber Reinforced Structures, Intended for Liquid Service.
- D 543 Test Method for Resistance of Plastics to Chemical Reagents.
- D 790 Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.
- D 3567 Standard Practice for Determining Dimensions of Reinforced Thermosetting Resin Pipe (RTRP) and Fittings.
- D 3681 Test Method for Chemical Resistance of Reinforced Thermosetting Resin Pipe in a Deflected Condition.
- D 5035 Test Method for Breaking and Elongation of Textile Fabrics (Strip Method).
- D 5199 Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
- D 5813 Standard Specification for Cured-In-Place Thermosetting Resin Sewer Pipe.
- F 1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
- F 1743 Standard Practice for the Rehabilitation of Existing Pipelines and Conduit by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP).

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

MATERIALS AND EQUIPMENT

A. LINER MATERIAL - GENERAL

1. The tube shall be light-colored or white liner material to facilitate closed-circuit TV inspection shall be used.
2. The liner material, including any plastic covering and the thermosetting resin shall conform to the requirements of ASTM D5813 and F1216.
3. Resin-impregnated tube liner material shall consist of one or more layers of flexible needled felt, or equivalent woven or non-woven material.
4. Capable of carrying resin, and withstanding installation pressures and curing temperatures. The tube should be compatible with the resin system to be used on this project.
5. Able to stretch to fit irregular pipe sections and negotiate bends.
6. The length of the liner shall be sufficient to effectively carry out installation and seat the liner at the inlet and outlet pipes of each manhole. All lengths

shall be verified by the Contractor prior to construction.

7. The Contractor shall be responsible for ensuring that the correct liner is installed in each sewer being rehabilitated.
8. The actual cured liner thickness shall be ± 5 percent of the approved design thickness and shall not include the thickness of the membrane coating.
9. Outside layer of tube should be plastic-coated with material compatible with resin system used.
10. The felt content of the liner shall be determined by the manufacturer but shall not exceed 25 percent of the total impregnated liner volume.
11. The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured meets the minimum requirements given herein or those that are to be utilized in the design of the CIPP liner for this project. The quantity of resin used for the tube's impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances being made for polymerization shrinkage and the anticipated loss of any resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used in conjunction with a roller system to achieve a uniform distribution of the resin throughout the tube.

B. LINER MATERIAL – PHYSICAL REQUIREMENTS

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

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

CONSTRUCTION DETAILS:

The CIPP shall be installed in accordance with the practices given by ASTM F 1216 (for direct inversion installations) or ASTM F 1743 (for pulled-in-place installations). Under this item the Contractor shall perform cured-in-place pipe lining; furnish, install, operate and maintain, and when completed remove, all necessary equipment; furnish, install impregnate and cure pipe lining materials and provide all incidentals necessary for complete sanitary sewer cured in place pipe lining in accordance with the contract documents and the requirements of these specifications.

A. *SYSTEM DESCRIPTION*

1. LINER DESIGN REQUIREMENTS

- a. The liner shall be designed to have a service life of a minimum of 50 years under continuous hydraulic and structural loading conditions.
- b. The liner shall be designed by a Professional Engineer Registered in the State of Connecticut.
- c. The thickness of liner system will be designed for a fully deteriorated host pipe condition. Design calculations shall be based on a minimum ovality of 2 percent, a soil unit weight of 120 pounds per cubic foot, a soil modulus of 1000 psi and a water table condition at the ground surface. Traffic loads shall be based on HS-20-44 highway loading. A minimum safety factor of 2.0 shall be used and the short term modulus of elasticity shall be reduced by 50 percent in the calculations.
- d. Manning's "n" value used for the host pipe shall be 0.015, and rehabilitated line shall be 0.013.
- e. Diameter and wall thickness of new liner shall be manufactured to size such that when installed, it will provide minimum wall thickness determined by the use of the standard flexible pipe equations as detailed in ASTM F1216.
- f. The short-term modulus of elasticity shall be reduced by 50 percent in the calculations.
- g. Assume that the installed CIPP shall have complete structural support, without considering structural support from existing pipe except during construction.
- h. The design of the liner shall include considerations for ring bending, deflection, combined loading, buckling, and ovality.

2. LINER PERFORMANCE REQUIREMENTS

- a. Liner system shall have minimal effect on the flow-carrying capacity of the existing sewer, but in no case shall system capacity be reduced by more than 16 percent.
- b. Liner material shall be inert to attack by domestic sewage and suitable for use in underground sewer environment.
- c. Liner material shall be manufactured in such manner as to result in tight-fitting liner

after installation. There shall be no measurable continuous annular space between outside diameter of new liner and the inside diameter of the existing host pipe.

B. SUBMITTALS

1. SHOP DRAWINGS

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

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

- a. Shop Drawings shall be submitted for review by the Engineer at least ten (10) working days prior to start of work.
- b. Submit flow control and bypass pumping plans and locations with sufficient detail to assure that Work can be accomplished without service interruption or sewage spill. The bypass pumping plan shall be in accordance with the provisions of Item 516, Sanitary Sewer Flow Control and Bypass Pumping.
- c. Submit an emergency response plan to be followed in event of failure of bypass pumping system.

2. PRODUCT DATA

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

- a. Manufacturer's certification that liner materials are in compliance with specifications, codes, and standards referenced herein.
- b. Installation instructions and details of component materials and construction details, including complete manufacturer's recommendations for storage and handling procedures and temperature control, and inserting liner, curing details, and trimming, sealing and finishing.
- c. Manufacturer's certification that liner has been properly sized to avoid creation of wrinkles or folds including field measurements, and pipe-sizing calculations.
- d. Resin manufacturer's specifications, characteristics and properties of the resin, methods of application, curing temperatures, and duration of temperature (step cooking temperatures/hours at each and final stages).
- e. A history of successful production of the materials to be used acceptable to the Engineer

3. CONTRACTOR QUALIFICATIONS

The Contractor performing the CIPP lining work shall be fully qualified, experienced and

equipped to complete this work expeditiously and in a satisfactory manner. The Contractor shall submit the following information to the Engineer for review at the time of the bid opening:

- a. The number of years of experience in performing this type of specialized work.
- b. The name(s) of the CIPP lining manufacturer(s) and supplier(s) for the work and previous work listed below.
- c. Evidence acceptable to the Engineer, such as certified copy of license or agreement, establishing that the Contractor has authority from patent owner(s) to use and/or install patented equipment, materials and methods.
- d. A list of municipal clients for whom the CIPP Contractor has performed this type of work without defects or performance problems for a period of three years after installation. This list shall include the names and telephone numbers of persons who can be contacted to verify previous satisfactory performance. A description of the actual work performed. The Contractor shall write the type of installation process (inversion or pulled-in-place) that was used for the work. The list of municipal clients shall include the approximate linear footage and sizes of CIPP lining installed.

C. *QUALITY CONTROL*

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

D. *QUALITY ASSURANCE*

1. The Contractor shall comply with the requirements of these specifications and all applicable product manufacturer's recommendations. Any conflict between product manufacturer's recommendations and any portion of these specifications shall be resolved by the Engineer prior to the start of the work.
2. Manufacturer Qualifications: Products used in the work shall be produced by manufacturers regularly engaged in the manufacture of similar items, and with history of successful production acceptable to the Engineer.
3. Installer Qualifications: Licensed by lining system manufacturer, and have the following qualifications:
 - a. Thoroughly trained and experienced in necessary crafts.
 - b. Completely familiar with specified requirements and methods needed for proper performance of Work.
4. All CIPP linings shall be from a single manufacturer. The supplier shall be responsible for complying with the provisions of all test requirements specified in the respective ASTM standards.
5. Pre-installation inspections of the CIPP lining material may be made by the Engineer or other representative of the Authority after delivery to the site. The CIPP shall be subject to

rejection at any time prior to installation for failure to meet any of the specification requirements, even though sample CIPP may have been accepted as satisfactory at the place of the manufacturer. CIPP rejected after delivery shall be marked for identification and shall be immediately removed from the project site.

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

E. DELIVERY, STORAGE, AND HANDLING

1. The Contractor shall exercise care during transportation, handling, and installation of the liner to ensure that the liner material is not torn, cut, exposed to direct sunlight or otherwise defective or damaged.
2. If any part of the liner material becomes torn, cut, or otherwise damaged before or during insertion, the Contractor shall repair or replace the affected section at Contractor's expense before proceeding with any additional lining work.
3. The liner shall be adequately supported and protected during delivery storage and handling. The liner shall be stored and handled according to the manufacturer's recommendations.

F. MANUFACTURERS

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

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

G. GUARANTEE

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

H. LEGAL, SAFETY AND HEALTH REQUIREMENTS

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

The Contractor shall conduct the work at all times in such a manner as to ensure the safety of the traveling public. The convenience of the general public and of the residents along and adjacent to the site shall be provided for in an adequate and satisfactory manner as the Engineer may direct.

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

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

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

I. PROSECUTION OF THE WORK

1. EXAMINATION

- a. The Contractor shall take field measurements of pipe inside diameter of sewer lines to be rehabilitated.
- b. In conjunction with review of color closed-circuit television (CCTV) records, provide correct liner diameter and wall thickness to ensure tight fit with existing pipe to be restored.
- c. Confirm lengths of liner to be installed.
- d. Locate live services prior to rehabilitation activities. Each service connection shall be noted by size, position from reference manhole, and orientation with respect to circumference of pipe. For purposes of this specification, live services include inactive service lines to vacant lots, vacant buildings, or to occupied buildings with more than one service line serving property.

2. PREPARATION

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

- a. Control sewer flow.
- b. Clean sewer.
- c. Perform television inspection of sewer.
- d. Take precautions to protect the new liner, and existing pipe and manholes from damage that might result from the liner insertion process.

3. SEQUENCE OF WORK

The Contractor shall perform work in the following sequence:

- a. Divert sewer flow to comply with the requirements of Item 516, Sanitary Sewer Flow Control and Bypass Pumping.
- b. Perform point repairs called out in the project documents or as directed by the Engineer.
- c. Clean sewer in accordance with the requirements of Item 518, Sanitary Sewer Cleaning and perform pre-insertion television inspection to comply with the requirements of Item 522, Sanitary Sewer Television Inspection. Complete cleaning and television inspection a minimum of 24 hours prior to commencement of lining operations.
- d. Install and cure liner and seal ends.
- e. Perform adaptation and sealing of liner at intermediate manhole inverts, as applicable.
- f. Reconnect service connections.
- g. Perform post-insertion television inspection to comply with the requirements of Item 522, Sanitary Sewer Television Inspection.

4. PIPELINE POINT REPAIR

- a. The Contractor shall repair pipeline where point repairs are identified in Contract documents or as directed by the Engineer in accordance with the requirements of Item 521, Sanitary Sewer Point Repairs.
- b. Pipe and repair materials shall be as directed by the Engineer, unless otherwise indicated on the contract documents.
- c. Trenching and excavation shall conform to the requirements of Item 205, Trench Excavation and Backfill.
- d. Bypassing and Dewatering: When required to maintain sanitary service, bypass sewer flow around work area, in conformance with the requirements of Item 516, Sanitary Sewer Flow Control and Bypass Pumping.
- e. Notify the Engineer, a minimum of forty-eight (48) hours in advance of commencement of pipeline point repair work at each particular location.
- f. Installation and Field Inspection: Installation of replacement pipe and/or repair work shall conform to the requirements of Item 512, Sanitary Sewer. All pipeline point repairs shall be inspected by the Engineer and the Authority's Inspectors prior to back filling and compaction.

5. LINER INSTALLATION - CIPP

Contractor shall perform operations in strict accordance with OSHA and manufacturer's safety requirements. Particular attention is drawn to safety requirements involving entering

confined spaces, work on elevated platforms, and working with pressurized equipment.

- a. The Contractor shall install liner for cured-in-place pipe in accordance with ASTM F1216.
- b. *Resin Impregnation:* The Contractor shall designate a location where uncured resin in original containers and un-impregnated liner tube will be impregnated prior to installation. The Contractor shall notify the Engineer where resin impregnation will take place.
 - i. A vacuum impregnation process with roller system or other approved method designed to uniformly distribute resin throughout tube shall be used.
 - ii. The Engineer may inspect materials and “wet out” procedure.
 - iii. Use resin and catalyst system compatible with requirements of this method.
- c. *Liner Insertion:* The Contractor shall install the liner through existing or new manholes. Unless otherwise approved in writing by the Engineer, excavation for liner insertion shall not be permitted. Ensure that pressure in liner exceeds both pressure due to groundwater head and any pressure due to sewage in laterals or connecting side sewers.
 - i. Insert impregnated tube through existing or new manholes by means of installation process and application of hydrostatic head, compressed air, or other means sufficient to fully extend it to next designated manhole or termination point.
 - a) Inflate and firmly adhere liner to pipe wall.
 - b) Install liner at rate greater than three feet per minute and less than 10 feet per minute.
 - ii. Prior to insertion, mark exterior of manufactured tube along its entire length at regular intervals not to exceed five (5) feet as a gauge to measure elongation during installation.
 - a) During insertion of resin impregnated tube into pipeline, maximum allowable longitudinal elongation or stretch of material shall be 5 percent.
 - b) Longitudinal stretch of tube shall be gauged by comparing markers on fully inserted tube to actual length of pipe being rehabilitated.
- d. *Insertion by Inversion:* Insert wet out liner through existing manhole by means of inversion process, and application of hydrostatic head or air pressure sufficient to fully extend it to next designated manhole.
 - i. At lower end of standpipe or guide chute, turn liner inside out and attach to standpipe (or chute) so that a leak proof seal is created.
 - ii. Adjust inversion head or air pressure to be of sufficient magnitude to cause

impregnated liner to invert from manhole to manhole, hold tube tight to pipe wall, and produce dimples at service lateral connections and flared ends at manholes.

iii. Use lubricant if required.

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

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

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

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

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

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

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

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

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

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

6. CURING

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

- a. Equipment shall be capable of delivering hot water, air, and/or steam throughout section by means of pre-strung hose to uniformly raise temperature above temperature required to affect cure of resin.
- b. Temperature shall be determined by manufacturer based on resin/catalyst system employed.
- c. Perforate hose in accordance with manufacturer's recommendations, or other methods acceptable to the Engineer
- d. Fit heat source piping with suitable continuous monitoring thermocouples to gauge temperature of incoming and outgoing curing medium.
- e. Temperature of curing medium shall meet requirements of resin manufacturer as measured at heat source inflow and outflow return lines.
- f. Place additional continuous monitoring thermocouples between impregnated felt tube and pipe invert at manholes.
- g. Curing medium temperature in line during cure period shall be as recommended by resin manufacturer.
- h. Ensure that elevated curing temperatures do not over stress liner materials.
- i. Initial cure shall be deemed to be complete when, an inspection of the exposed portions of the liner appears to be hard and sound and remote temperature sensor indicates that temperature is of magnitude to realize exothermal curing.
 - a) Cure temperature shall be held for period recommended by resin manufacturer during which time distribution and control of curing medium shall continue.
 - b) Curing time required for the resin shall be determined with due consideration for most pipe material, resin/catalyst system, ambient temperature, moisture level, and thermal conductivity of soil.
- j. To ensure proper heat distribution of rehabilitation systems using heat exchange methods, and to prevent creation of flat bottoms in liner profile, the Contractor shall take steps to isolate the new liner system by temporarily stopping inflow and infiltration, and removing standing water, or by using reinforced, flexible pre-liner to isolate new liner.
- k. Equipment used to supply heat and pressure shall be capable of providing necessary heat and pressure required for installation condition. Heat sources shall be fitted with suitable monitors to gauge temperatures and pressures until curing is complete.

7. COOL-DOWN

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

- a. Cool-down may be accomplished by introduction of cool water or air into lined pipe

to replace water or steam and water being drained.

- b. Drain water from small hole made in downstream end.
- c. Prevent development of vacuum during release of static head or air pressure that could damage pipe or newly installed lining.
- d. After tube has cured, a sufficient cool-down period shall elapse prior to continuation of the work.

8. SEALING AT MANHOLES

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

- a. All cutting and sealing of lining at manhole connections shall provide watertight pipe and manhole trough seals. All cut edges of the cured liner shall be thoroughly sealed with the same resin as was used in the liner. The catalyst or hardener used shall be compatible with the resin/catalyst used in the liner previously, but shall not require an external heat source to begin the exothermic reaction (curing).
- b. Where the liner has been continuously laid through a manhole during installation, the cured liner shall be neatly saw cut to fit the top of the channel through the width of the manhole base. Any void between the manhole shelf and the liner wall shall be cleaned and filled with hydraulic grout. The cut edges of the cured liner shall be sealed with resin as described above.

9. REINSTATEMENT OF SERVICES

- a. Live services shall be reinstated as soon as possible.
- b. Reconnect from interior of sewer line by means of a handheld cutting device or television camera and remote-controlled cutting device, appropriate for the liner material and the rehabilitated sewer pipe.
- c. Excavation for service reinstatement will not be allowed.
- d. Holes cut through rehabilitation liner for service laterals shall be neat and smooth, and shall match the entry invert of the service line. Coupons should be recovered at downstream manhole and removed.
- e. Service openings shall be reinstated to minimum of 95 percent and maximum of 100 percent of service lateral pipe area.
- f. New edges shall be brushed smooth with no loose or abraded material.
- g. Seam between host pipe and new liner at reinstated service shall be free of gaps, voids, or cavities. Excessive gaps, voids, or cavities as determined by the Engineer shall be tested and sealed as described herein:
 - i. Chemical grouting: The procedure for testing and sealing lateral connections

from the mainline sewer with appropriate chemical grouts shall conform to the requirements of ASTM F 2454. The approved procedure uses the lateral packer method.

- h. Post-construction CCTV will show focused close-up of entire perimeter of each service reconnection.
- i. Provide fully-operational backup device for reinstating service laterals. If for any reason remote cutting device fails during reinstatement of service lateral, standby device shall be immediately deployed to complete reinstatement.
- j. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs associated with such excavation and restoration work.

10. SEWER LATERAL / SEWER MAIN CONNECTION LINING

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

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

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

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

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

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

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

It is the intent of this portion of the specification to provide the requirements for the rehabilitation of sewer lateral connections to sewer mains, without excavation, by filling all

voids with an epoxy-coated repair mortar as specified in this Specification.

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

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

a. MORTAR

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

b. EPOXY COMPOUND FOR LATERALS

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

J. FIELD QUALITY CONTROL

1. CCTV INSPECTION

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

- a. Finished liner shall be continuous over entire length of liner insertion run between manholes, and free from visual defects such as foreign inclusions, dry spots, pinholes, and de-lamination.
- b. Wrinkles in finished liner pipe which cause backwater of one inch (25 mm) or more,

or reduce hydraulic capacity of pipe (wrinkles which exceed 5 percent of pipe diameter) and wrinkles in finished liner that reduce structural stability of pipe are unacceptable and affected sections of lined pipe will be removed and repaired at no additional cost to the Authority.

- c. In the event that the Engineer, based on post installation CCTV inspections, has reasonable cause to suspect that annular space exists between liner and host pipe, Contractor will be directed to excavate and expose existing sewer and remove existing host pipe such that confirmation of suspected annular space can be made.
 - i. If annular space is determined to exist, repair in manner approved by the Engineer.
 - ii. If it is determined that no annular space exists, Contractor shall be reimbursed in accordance with § 109-04, **Extra and Force Account Work**.

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

K. TESTING FOR CERTIFICATION

1. The Contractor shall provide sufficient specimens from each length of CIPP Lining installed to allow an independent laboratory to conduct three separate tests for each of the flexural and tensile properties of the liner as specified below. The specimens shall be cut from each installed liner at an intermediate point, the termination point or from the downtube after the liner has been cured and cooled. Each specimen shall be clearly marked to indicate the installed location of the liner, the date of installation, the pipe diameter and the resin used. The following test shall be performed for each length of CIPP lining installed: Short-Term Flexural (Bending) Properties -The initial tangent flexural modulus of elasticity and flexural yield strength shall be measured in accordance with ASTM D790.
2. Copies of the certified test results shall be sent directly to the Engineer by the laboratory. The certified results shall report the actual test results obtained for all three specimens used for each test, the average of the three results and the standard deviation of the results for each of the properties being tested.
3. Each individual reported value shall meet or exceed the value of that property as specified in this Item or as used in the design calculations, whichever is higher.
4. **All the expenses incurred relating to the certified testing of the Cured-in-Place Pipe lining furnished under this Contract, shall be paid for by the Contractor.**

L. CLEAN UP

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

MEASUREMENT AND PAYMENT:

Sanitary Sewer Cured-in-Place Pipe Lining

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

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

Re-establish House Service Connections

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

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

Cut Protruding Taps

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

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

Flow Control and Bypass Pumping

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

Other Items of Work

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

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

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

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

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

<u>Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
520.01	(Size) Sanitary Sewer Cured-In-Place Pipe Lining	Linear Foot
520.10	Re-establish House Service Connection	Each
520.11	Cut Protruding (Type) Taps	Each

57H. Modification to Item 969 "Engineers Field Office"

Delete Item 969 in its entirety and replace with the following

"The contractor is not required to provide Engineers field office for the project."

57I. Modification to Item 971 "Maintenance and Protection of Traffic":

Under the "Description" heading of this item, Immediately after the first paragraph, **Insert** the following:

"This item includes installation, maintenance, relocation and removal of all maintenance and protection of traffic devices shown on the Closing Regulators 012 & 020 plans and any other devices that may be required. Maintenance and Protection of Traffic Plans (MP&T) included in the Contract Drawings are provided for guidance and depict the minimum requirements. All signs and traffic control devices may not be shown. It is the Contractor's sole responsibility to provide all signs, sign supports, devices and appurtenances necessary to maintain pedestrian and vehicular traffic safely throughout the work zone in complete compliance with all City of New Haven requirements. The traffic signing, barrier curbing, detours, etc. necessary will require change during the life of the Contract."

"The Contractor shall be required to place his/her name on the back of every temporary traffic sign/device placed throughout the site. The name shall remain in place for the duration of the Contract. Each sign shall be reviewed by the Engineer for this name tag and any payment due for MP&T shall be withheld until all project signs are so marked. This information will be used to determine sign device ownership at the end of the project."

"The Contract Documents contain a recommended and approved Traffic Detour Plan and Maintenance & Protection of Traffic Plan for various phases of construction under the Closing Regulators 012 & 020 work. The Contractor may propose variations/modifications to the MP&T Plan only, which shall be submitted within ten (10) days of award of the Contract to the

Authority, the City of New Haven Department of Transportation, Traffic and Parking (NHDTTP) and the Engineer for review. Any variations/modifications to the MP&T Plan shall be prepared and submitted at no additional cost to the Authority. The Contractor must allow up to four (4) weeks for the review and approval of the modified plan. The final plan must provide for the minimum one-way or two-way traffic and lane sizes shown on the recommended plan. Any detouring of traffic shall be in accordance with the final approved plan and with the current City of New Haven standards, CT DOT Standards and the Manual of Uniform Traffic Control Devices, as amended."

"The Contractor is hereby reminded to the fact that a MP&T Plan also will be required for Restoration Work, which shall include, but not limited to, replacement of sidewalks, driveway and curbing, tree planting, landscaping restoration, the placement of bituminous concrete pavement, milling and the placement of bituminous overlay. During those times, pedestrian and vehicular traffic will be maintained and access to all properties, including businesses, will be maintained at all times. The restoration MP&T Plan shall be submitted, as stated above, for review and approval within thirty (30) days of the Contract Award. The cost of the preparation and submittal of this Restoration MP&T Plan shall be included in the lump sum price bid for Project MP&T."

"Refer to Section 14" Construction Traffic Scheduling and Access" of the Special Specifications and Notes and the approved MP&T Plans and notes for work hours, lane widths and other requirements."

"No street shall be completely closed to traffic at any time without specific prior written approval of the NHDTTP."

"Prior to the commencement of any activity, which could impede or interfere with the normal movement of traffic, the Contractor shall notify the City of New Haven Department of Police Services or the State of Connecticut and request an off-duty police officer to act as a trafficman. **Should the Contractor utilize his own employees as trafficmen, no separate payment for this labor will be allowed.**"

Under the "Materials and Methods" heading of this Item: Under 1. *Access*, **Add** the following paragraph after the last paragraph:

"The Contractor shall maintain access to all driveways, residences and businesses. He shall provide whatever signs are necessary to assist open businesses, pedestrian traffic and revised parking conditions. The Contractor shall plan for providing special signage, beyond those required in the approved MP&T Plan and Detour Plan, that shows local businesses are open and that shows how vehicles are to be parked. See Item 1208 of the Standard Specifications and modifications to Item 1208 in the Special Specifications and Notes (paragraph 57.K)."

Under the "Materials and Methods" heading of this Item: Under 2. *Detours*, **Add** the following after the first paragraph:

"The Contractor shall install detour signage one (1) week prior to detour implementation and cover each sign. The Engineer and the City will then inspect the signage prior to uncovering. The Contractor shall include warning signage for the public that warns of new traffic patterns being installed for construction beginning as of a specific date (the

Contractor shall fill in the date in accordance with his schedule)."

Under the "Materials and Methods" heading of this Item: Under 3. *Signs*, **Add** the following after the first paragraph:

"All construction signs shall conform to Section 12.20 Construction Signs -Type III Reflective Sheeting of the CT DOT, Form 817, latest revision. All construction signs shall have the Contractor's name on the back of each sign."

"Any additional traffic/detour signs of a type shown on the approved MP&T Plans, Contract Details or City/State Standards that are requested by the Authority, the City or the Engineer shall be included in the lump sum price bid for MP&T. Any special signs required by the Authority, the City or the Engineer of a type not shown on the approved MP&T Plans, Contract Details or City/State Standards shall be measured and paid at the square foot price bid in conformance with Item 1208 of the Standard Specifications and any Modifications to Item 1208 in the Special Specifications and Notes (paragraph 57.K)."

Under the "Materials and Methods" heading of this Item: Under 9. *Trafficmen*, **Delete** the third paragraph in its entirety.

Under the "Materials and Methods" heading of this Item: After 9. *Trafficmen*, **Add** the following paragraphs:

"10. *Bus Passage and Bus Stops*: The Contractor shall coordinate the construction activities with the City of New Haven Department of Transportation, Traffic and Parking to allow for the safe passage of all buses. The Contractor shall adjust his construction traffic patterns, as required, to allow for that safe passage. Several bus stop locations are shown in the MP&T Details. All locations may not be shown. The Contractor shall verify all current bus stop locations and schedules within the Project limits, or that will potentially be affected by the construction operations, with the City and Yale University. The Contractor shall adjust his operations to minimize impacts to the bussing operations. All bus stop locations, if required, shall be temporarily relocated to within 200-feet of the current location and clearly marked with temporary signs. The relocation work will be reviewed and approved by the City before and changes are made. All of cost of the coordination work, including research, relocating the bus stops, temporary signage, removal of the temporary bus stop and signage, and the restoration of the bus stop and signage in its original location, all to the satisfaction of the City, shall be included in this work and the MP&T lump sum price bid."

"11. *Safety Fence*: Safety fencing shall be provided at all work areas for separation of pedestrians from the work zone. The fence shall be six (6) foot high, galvanized, chain link type fencing with pipe supports (or approved equal) to allow for moving/relocating at the various work areas. Screening shall be provided when required by the City or the Authority. No trench will be allowed to remain open during non-working hours."

Under the "Measurement and Payment" heading of this Item: Immediately after the last paragraph, **Insert** the following:

"The Contractor shall include in the lump sum price bid for Item 971" Maintenance and Protection of Traffic", the cost of all State and Local permits, including City of New Haven fees associated

with the bagging and/or removal of existing parking meters, as well as, removing vendor parking spaces from use, as required to perform the work stipulated in the Contract Documents. It is anticipated that the City of New Haven will require a payment in the amount of twenty dollars (\$20.00) per day for the loss of each meter and vendor space. The Contractor shall include this daily cost in the lump sum price bid for Item 971. The Contractor shall submit invoices from the City of New Haven with each monthly payment requisition to the Authority for the meters that were taken out of service, or bagged.

"During trenching to install bypass forcemain under roadway intersections, the Contractor shall anticipate that existing electrical/telecommunications conduits and associated wiring, and direct buried wiring, for traffic signals, pedestrian controls, etc. may be impacted and damaged. The Contractor shall take every precaution to protect and maintain these conduits/direct buried wires. Should these conduits/wires be damaged, the Contractor shall restore the conduits and wiring to original or better condition and restore active service as required and ordered by the Engineer at no additional cost to the Authority. The Contractor will hire an electrical/telecommunications contractor, if required, to ensure service is restored completely and properly.

"Upon completion of the final pavement, and when directed by the Engineer, the Contractor shall provide and install traffic signal sensors and new pavement markings to replace existing pavement markings and traffic sensors removed during construction. Striping shall be in accordance with and paid for under the appropriate item in the Standard Specifications (see Items 1209 and 1210). The cost of replacing damaged traffic signal sensors shall be in accordance with Item 1111 of the Standard Specifications and paid for under the bid item for "Loop Vehicle Detector and Sawcut"."

"During the construction period, and to support the Maintenance and Protection of Traffic, the Contractor will be required / directed to place temporary pavement striping/markings/symbols at several different locations and times during the various construction phases to maintain construction traffic patterns. These temporary pavement striping/marking/symbol applications shall be a fast-drying paint. Temporary paint, if necessary, shall be removed by grinding only. The installation and removal of temporary striping/marking paint/tape will be measured and paid in accordance with the respective pay item shown in the Bid Proposal for each time the marking is placed. No separate measurement or payment will be made for the removal of existing pavement markings in conflict with the temporary markings or for removal of the temporary markings. Each unit price bid shall include the removal of existing pavement markings in conflict and the furnishing and installation of the new temporary striping/marking/symbol as shown on the Detour Plans, or as directed by the Engineer, and the removal of the temporary pavement marking at each stage of construction to fit the new detour scheme. Temporary pavement striping/marking/symbols shall conform to the applicable portions of Standard Specifications and/or Sections 12.09, 12.10, 12.11 and 12.12 of the CTDOT Form 817."

"This lump sum item shall include all construction signage, sign supports in accordance with City/State standards and details, cones, drums, barricades, flashers, fencing, high mounted internally illuminated flashing arrows, impact attenuators in accordance with City/State standards and details, and any other appurtenances or devices required to complete the work of the approved MP&T Plans, Detour Plans and City/State Standards to the satisfaction of the Engineer. City Police, removal of existing pavement markings as directed by the Engineer, temporary pavement markings and changeable message signs are not included and shall be measured separately for payment under their respective bid item."

"Unless otherwise specified, the work necessary to achieve the above conditions will be paid for according to Item 971 of the Standard Specifications. Note that the price for "Maintenance and Protection of Traffic" shall include all costs for labor, equipment and services involved in the erection, maintenance, moving, adjusting, relocating and storing of all traffic control signs and devices."

Under the "Payment" heading of this Item: **Delete** the existing pay items and **Replace** them with the following:

<u>Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
971.1	Maintenance and Protection of Traffic	Lump Sum

57J. Modification to Item 985 "Project Survey and Stakeout":

Under the "Construction Details" heading and under the "Project Survey and Stakeout" heading of this Item: **Add** the following paragraph after the last paragraph:

"The Contractor shall locate all existing signs within the Project limits prior to any construction. This survey data will be used to re-establish existing signage. The information will be placed on a copy of the Contract Drawings and submitted to the Engineer. The information shall contain sufficient dimensions, descriptions and details to re-establish all signs."

Under the "Construction Details" heading and under the "Project Survey and Stakeout" heading of this Item: **Add** the following paragraph after the first paragraph:

"The Contractor shall be required to maintain a set of "As-Built" prints in the Contractor's Field Office that are red-marked on a weekly basis that show the construction progress and as-built field information. These prints shall be updated by noon on each Friday, at a minimum, and shall be available for the Engineer to review. There shall be no separate measurement or payment for maintaining this red-marked set of prints with as-built information. It shall be included in the lump sum bid for this Item."

Under the "As-Built Documents" heading of this Item: **Add** the following paragraph after the last paragraph:

"The Contractor shall be required to prepare and submit as-built sketches for each sanitary sewer lateral reconnection and new private inflow storm lateral connection made on the project. The sketches and information shall be placed on formal GNHWPCA forms (8 1/2" x 11") that will be provided to the Contractor along with a sample to be used as guidance for completion of the form. At a minimum, the as-built sketches shall include the following information. The Superintendent of Sewers can request additional information be incorporated into the sketches for clarity:

- Sanitary sewer or storm lateral pipe size and material of construction.
- Type of connection made (e.g. core and boot, chimney, etc.).
- Distance of hub connection from the nearest sanitary sewer or storm manhole measured along the main sewer or storm line.
- Triangulated ties off the foundation for cleanouts, bends or changes in horizontal and vertical direction.
- Depth of the sanitary sewer or storm lateral invert at all locations listed above and at the curb line.
- Clock diagram cross section depicting the lateral entrance to the main.

- Plumber's or Contractor's name and license number.
- Connection time and date.
- For demolitions, the location of the sewer or storm plug."

Under the "Measurement" heading of this Item: **Delete** the sentence and **Add** the following:

"Payment for this Item will be made on a monthly basis using the Lump Sum price bid in the Bid Proposal."

Under the "Payment" heading of this Item: **Delete the** second sentence and **Replace it** with the following:

"Monthly payments will be made under this work up to 75% of the total Lump Sum amount. The remaining 25% of the Lump Sum will be held until the As-Built drawings have been submitted and approved."

57K. Modification to Item 1208 "Sign Face -Sheet Aluminum"

Under the "Description" heading of this Item: **Delete** the existing paragraph and **Insert** the following:

"The Item "Sign Face -Sheet Aluminum" shall be used for the furnishing and installing of new permanent signage as directed by the Authority, the City or the Engineer."

The Items "Temporary Signage (Miscellaneous or Building)" shall consist of the furnishing and installation of temporary special signage for local businesses, for informational purposes, etc."

"Traffic control, detour signs and any other signage required under "Maintenance and Protection of Traffic", whether shown on the Maintenance and Protection of Traffic Plans or not, will not be paid under items 1208.01, 1208.02 or 1208.03."

Temporary special signage shall be reflective, shall be sheet aluminum or plywood conforming to Section 12.20 of Form 816, and shall have shop drawings prepared by the Contractor showing the sign material, dimensions, color, wording and the mounting materials/methods. The shop drawings shall be submitted for review as required by the Specifications. A list of some, but not all, of the typical special signs that may be required are:

- Business Open During Construction (with business name)
- Pedestrian Access and Directions
- Walk Bicycles in Construction Area
- No Pedestrian Access Beyond This Point"

"New traffic control/directional signage requested by the Authority, the City or the Engineer shall conform to the current City or State standards and details. There will be no payment under this item for removal, storage and resetting of existing signage"

Under the "Construction Details" heading of this Item: Immediately after the sixth paragraph, **Insert** the following:

"Where possible, and when approved by the property owner and the Engineer, the Contractor may elect to mount temporary signage onto a building face, an existing pole or on some other approved

signage mounting apparatus. Any damage to existing buildings, poles, etc. shall be repaired to the satisfaction of the property owner and the Engineer without additional cost to the Authority. It is assumed this sign could have a size up to 3 ft. x 4 ft."

Under the "Measurement" heading of this Item: **Delete** the existing paragraph and **Insert** the following:

"This work will be measured for payment by the number of square feet of temporary or permanent signage of the type specified/directed, installed and accepted by the Engineer."

Under the "Payment" heading of this Item: **Delete** the existing paragraphs and **Replace** them with the following:

"This work will be paid for at the Contract unit price per square foot bid for the pay items listed in the Bid Proposal. The unit price bid shall include the completed sign; metal sign posts and installation for permanent signs; metal or wooden sign posts and installation for temporary signage; mounting of temporary signage to buildings, poles or other devices; mounting hardware, including reinforcing plates for permanent signs; the removal and disposal of temporary signage; and all materials, equipment, labor and work incidental thereto. There will be no payment for the reuse and resetting of temporary signage that can be used in other locations during the construction period. The Contractor shall only be paid once for the furnishing and installation of each temporary special sign."

<u>Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1208.01	Sign Face Sheet Aluminum	SF
1208.02	Temporary Signage (Building)	SF
1208.03	Temporary Signage (Miscellaneous)	SF

57L. Modification to Item 1209 "Painted Pavement Markings":

The following modifications are made to Item 1209 of the Standard Specifications:

Under the "Payment" heading of this Item: **Add** the following new paragraphs and pay items:

"The work for temporary markings shall be paid by the linear foot, by the square foot or by each price bid for the fast-drying paint, width, symbol and legend specified or detailed, installed on the pavement and accepted in accordance with the pay items listed below. The unit price bid for temporary markings shall include all pre-marking layout, removal of conflicting pavement markings, cleaning of the pavement, paint or tape, application of paint or tape, protection during drying, removal of the tape or paint when necessary by construction staging or directed by the Engineer, and all other materials, tools, labor and equipment incidental to the work."

"The removal of paint markings made by "Call Before You Dig" or Contractor operations, that may be present on existing or new concrete, bituminous or brick sidewalk/driveway, shall be removed by power washing. The power washing device and solution to be used shall be approved by the Engineer before use. The Contractor shall verify that the markings to be removed are from this Project and not from another Project before removal. The unit price bid for this item shall include surface preparation, furnishing the power equipment and solution, and all equipment, labor, tools and materials necessary to complete the paint markings to the satisfaction of the Engineer."

<u>Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1209.01	Temporary Pavement Markings (fast-drying paint), 4" or 12" wide	LF
1209.02	Temporary Pavement Markings (fast-drying paint), Symbols, Legends	SF
1209.03	Power Washing for Removal of Paint Marks from Concrete/Brick	SF

57M. Modification to Item 1210 "Epoxy Resin Pavement Markings":

Under the "Measurement" heading of this Item: **Delete** the paragraph and **Add** the following new paragraph:

"Epoxy resin pavement markings shall be measured for payment by the linear foot, by the square foot or by each installed on the pavement and accepted by the Engineer. The measurement units shall be in accordance with the pay items listed below."

Under the "Payment" heading of this Item: **Delete** the first paragraph and all pay items and **Add** the following new paragraph and pay items:

"The work for permanent markings shall be paid by the linear foot, by the square foot or by each price bid for the width, symbol and legend specified or detailed installed on the pavement and accepted in accordance with the pay items listed below. The unit price bid shall include all pre-marking layout, cleaning off the pavement, paint, application of paint, protection during drying and all other materials, tools, labor and equipment incidental to the work. Payment will not be made for pavement markings affected by Contractor error and ordered removed."

"Item Number	Pay Item	Pay Unit
1210.01	Pavement Markings (Epoxy Resin), 4" Wide, White or Yellow	LF
1210.02	Pavement Markings (Epoxy Resin), 12" Wide, White or Yellow	LF
1210.03	Pavement Markings (Epoxy Resin), Symbols, Legends	SF

TABLE OF CONTENTS

58. SPECIAL TECHNICAL SPECIFICATIONS

SECTION 1500 - UNIFORMED LOCAL AND STATE POLICE OFFICERS.....	SS-69
SECTION 1506 DISMANTLING AND PLUGGING EXISTING PIPES AND STRUCTURES.....	SS-71
SECTION 1508 CONTROLLED LOW STRENGTH MATERIAL	SS-73
SECTION 1510 ALTER EXISTING MANHOLE, CATCH BASIN OR DROP INLET	SS-76
SECTION 1514 UNIFORMED TRAFFICMAN (FLAGGER)	SS-79
SECTION 1620 OBSERVATION WELL DECOMMISSIONING	SS-81

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

58. SPECIAL TECHNICAL SPECIFICATIONS

SECTION 1500 - UNIFORMED LOCAL AND STATE POLICE OFFICERS

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

- A. The Contract Drawings and the Greater New Haven Water Pollution Control Authority Standard Specifications apply to this Section of the Special Technical Specifications.

1.2 SUMMARY

- A. The Contractor shall keep the impacts to public traffic to a minimum. When, in the opinion of the Authority, Engineer or the City of New Haven, public safety or convenience requires the services of uniformed police officers, the Engineer may direct the Contractor to provide City of New Haven Police Officers and/or State of Connecticut Police Officers to direct traffic within the location of work under this Contract. When so directed, the Contractor shall make all arrangements in scheduling the police officers. Police officers shall not be utilized to serve as watchmen to protect the Contractor's equipment and materials.
- B. The services of Uniformed City of New Haven or State Police Officers, including departmental vehicles, shall be paid for by the Contractor on a weekly basis in accordance with an invoice from the City of New Haven Police Department and/or the State of Connecticut at the current hourly rates established by the City and State.

PART 2-PRODUCTS (None)

PART 3 -EXECUTION (None)

PART 4 -MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. The use of Uniformed Police Officers and Departmental Vehicles will be measured and paid for under the Contract Allowance for Uniformed Police Officers.
- B. Allowances are non-competitive cost items the Contractor shall carry in his Bid for the purpose of permitting the Authority to estimate the total Contract Value. The value of the allowance has been pre-determined by the Authority and is contained in the Bid Proposal. The City of New Haven Police Department and the State of Connecticut shall directly invoice the Contractor for providing services for the work. The Contractor shall, in turn, and as part of a regular monthly invoice to the Authority, include in his request for payment such actual incurred costs from both Police Departments. The Contractor's costs associated with processing said invoices (including, but not limited to, overhead and profit) shall be included in the various bid items listed in the Bid Proposal. There shall be no invoice mark-up by the Contractor. The Contractor agrees that no request for additional costs, overhead or profit, will be made.
- C. The Allowance total hours are to be assumed to be an upset limit and will not be exceeded without written authorization from the Authority. Adequate justification and advance

notice shall be provided by the Contractor before issuing that authorization.

<u>Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1500	Uniformed Police Officers	Allowance

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

SECTION 1506 DISMANTLING AND PLUGGING EXISTING PIPES AND STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contract Drawings and the Greater New Haven Water Pollution Control Authority Standard Specifications apply to this Section of the Special Technical Specifications.

1.2 SUMMARY

- A. Existing combined or separate sanitary and storm sewer lines, not removed by construction or called out for removal on the plans, shall be abandoned-in-place, plugged and filled with flowable fill where indicated on the Contract Drawings or as directed by the Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Brick shall conform to the requirements of Section M.11.03 of the Standard Specifications. Brick in contact with sewage shall conform to ASTM C-32 Grade MM.
- B. Mortar shall conform to the requirements of Section M.11.04 of the Standard Specifications.
- C. Controlled Low Strength Material shall conform to the requirements of Section 1508 of the Special Technical Specifications.

PART 3 - EXECUTION

3.1 CONSTRUCTION METHODS

- A. All existing sewers marked to be abandoned shall be plugged with brick and mortar on both ends forming a solid watertight bulkhead at least 8 inches thick and filled with controlled low strength material, as detailed. For the filling of pipes, the CLSM shall be pumped into the pipe and upon exiting the pipe, the discharge hose shall be slowly removed as the pipe fills. This slow removal will help to ensure that the pipe is filled completely and no voids remain

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. The abandonment of existing sanitary or storm sewer pipes will be measured for payment by the linear foot of pipe abandoned and filled with CLSM in accordance with the pipe sizes listed in the Bid Proposal and as approved by the Engineer.

4.2 PAYMENT

- A. The cost of abandoning pipe shall include the cost of plugging each end, entering structures

and large pipe to plug the lateral pipe, breaking of the existing sewer lateral, filling the pipe completely with CLSM, any excavation and trench and utility support required to expose the pipe ends, backfill with suitable backfill and compaction, and all materials, labor, tools and equipment to complete the work as required and detailed.

B. Payment for any Engineer approved use of CLSM beyond the abandonment of pipe or structures as stated above shall be paid as shown in Section 1508.

<u>Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1506.01	Abandoning Pipe in Place	LF

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

SECTION 1508 CONTROLLED LOW STRENGTH MATERIAL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The Contract Drawings and the Greater New Haven Water Pollution Control Authority Standard Specifications apply to this Section of the Special Technical Specifications.

1.2 SUMMARY

- A. Controlled Low Strength Material (CLSM) is a self consolidating, rigid setting material to be used in backfills, fills, structural fills, filling pipes to be abandoned-in-place and elsewhere as indicated on the drawings, or as directed by the Engineer. The flow and set time characteristics of CLSM shall be designed to meet the specific job conditions. All CLSM material covered by this specification shall be designed to be hand excavatable at any time after placement. It shall be composed of a mixture of Portland cement, aggregate and water, with the option of using fly ash and air-entraining agents and other approved admixtures.
- B. For the purpose of this specification, CLSM shall be used for filling and abandoning sanitary or storm sewer pipes and/or structures throughout the project. In addition, it may be used to backfill trenches or other excavations or to support existing utilities. It may be used elsewhere as ordered by the Engineer.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. All materials utilized in the CLSM mix design shall be in accordance with the applicable requirements of Article M.03.01 of the Standard Specifications.

2.2 COMPOSITION

- A. The composition of the CLSM shall be in accordance with the requirements set forth in Article M.03.01 – General Composition of Concrete Mixes, as well as the applicable Sections of ACI 229R. The Contractor shall submit each proposed mix design, with all supporting data, to the Engineer for review and approval at least two weeks prior to its use.
- B. The setting time of CLSM materials shall be designed so as to achieve the strength necessary to comply with the time constraints called for under the Maintenance and Protection of Traffic requirements of the project

specifications. The use of chloride accelerators is not permitted.

- C. The minimum compressive strength of the CLSM material shall be 30 pounds per square inch (psi) and the maximum compressive strength of the CLSM shall be 150 pounds per square inch (psi) when tested in accordance with ASTM D4832 after 56 days.
- D. The CLSM mix design shall utilize a nominal maximum size of No. 8 aggregate as specified in M.01.01 of the Standard Specifications.
- E. CLSM mixes that are designed with high-entrained air shall have a minimum of 25% entrained air when tested in accordance with ASHTO T152.

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

- A. CLSM shall only be placed when the ambient temperature is at least 30° F and rising. CLSM material shall be deposited within 2 hours of initial mixing.
- B. CLSM may be placed by chutes, conveyors, buckets or pumps depending upon the application and accessibility of the site. Should voids or cavities remain after the placement of the CLSM, the Contractor shall modify the placement method or flow characteristics of the CLSM. Voids or cavities, which have not been filled properly, shall be corrected as directed by the Engineer and at the Contractor's expense.
- C. For the filling of pipes, the CLSM shall be pumped into the pipe and upon exiting the pipe, the discharge hose shall be slowly removed as the pipe fills. This slow removal will help to ensure that the pipe is filled completely and no voids remain.

PART 4 -MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. This work will be measured for payment by the actual number of cubic yards of "Controlled Low Strength Material" installed and accepted within the pay limits shown on the Contract Drawings or as directed by the Engineer. "Miscellaneous" CLSM shall mean any pipe or structure not shown to be abandoned on the plans, but requested by the Engineer and any filling of pipe or structures located off-site, when directed by the Engineer.
- B. CLSM shall not be measured for payment to fill pipes or structures to be abandoned within the Project limits. The cost of the CLSM is included in the unit price bid for abandonment of the respective piping or structure.
- C. When CLSM for trench backfill is used, the minimum order size measured for payment shall be 5 cubic yards. The minimum order size for miscellaneous CLSM shall be 2 cubic yards.

4.2 PAYMENT

This work will be paid at the Contract unit price per cubic yard of "Controlled Low Strength Material", which price shall include excavation support, formwork, pumps, and all materials, equipment, tools and labor incidental thereto.

<u>Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1508.01	Controlled Low Strength Material (Pumped)	CY

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

SECTION 1510 ALTER EXISTING MANHOLE, CATCH BASIN OR DROP INLET

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The Contract Drawings and the Greater New Haven Water Pollution Control Authority Standard Specifications apply to this Section of the Special Technical Specifications.

1.2 SUMMARY

- A. The Contractor shall make alterations to existing manholes, catch basins or drop inlets as shown on the Contract Drawings and/or as directed by the Engineer.
- B. The following types of work will be included for item 1510.1 under this Section:
 - 1. Removing existing pipes,
 - 2. Inserting new pipes, including coring a new opening and installing a boot,
 - 3. Reconstructing inverts,
 - 4. Installing or removing traps,
 - 5. Building up the walls or sides of the existing structure to a new grade where the new grade is greater than three feet above the existing grade. (The measurement is made vertically from the bottom of the existing frame to the bottom of the frame at its new elevation.
 - 6. Cleaning manholes which have been altered.
 - 7. Supplying and setting a new frame, grate and cover.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Materials shall conform to the applicable sections of the Contract Specifications and the Contract Drawings for the specific type of structure being altered.

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

- A. If required, frames, grates, covers and granite curb inlets shall be removed from their present beds. They shall be stored safely at the site if they are to be reset. If they are not to be reused, they shall be delivered to the GNHWPCA, to the City of New Haven Central Services on Middletown Avenue or disposed of by the Contractor as directed by the Engineer.
- B. When the proposed grade is to be greater than three feet above the existing grade, the Contractor shall build up the walls or sides of the existing structure so the top of the structure will be of the required size or shape to receive the frame or granite curb inlet at the new grade.
- C. All cutting of existing masonry shall 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. New brickwork shall match the lines and contours of the existing structure and be set in a full mortar bed. Pipes shall be cut flush with the interior walls and the space between the wall and pipe completely filled with mortar.

- D. Existing pipes to be abandoned shall be plugged with a masonry or concrete bulkhead at least eight inches thick completely closing the pipe and forming a watertight seal. The inside face shall be flush with the structure wall and shall be parged with ½ inch of mortar. Inverts shall be of brick or concrete as specified for standard manholes. Extreme care shall be used in all cutting of existing masonry and any joints cracked shall be cleaned out and filled. All pipes abandoned-in-place shall be filled with a controlled low strength material.
- E. Traps shall be installed at catch basins specified on the plans or directed by the Engineer. Existing traps, which are specified to be removed, shall be completely removed and masonry repointed to fill all the holes as required.
- F. Where a catch basin lateral is connected to a manhole, and part of the alteration to the catch basin is to plug the lateral at both ends, the plugging of the lateral in the manhole shall not be considered as an alteration to the manhole.
- G. All catch basins being altered or modified shall be cleaned. This shall consist of the removal of all debris to the bottom of the catch basin. This material shall not be used for backfill. Cleaning of the new or existing catch basin laterals is considered as part of this specification.

PART 4 -MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Each catch basin, drop inlet or manhole altered shall be measured by the Engineer as a unit. All work performed on the catch basin, drop inlet or manhole (other than setting a new frame, grate, cover or granite curb inlet) will be considered as one alteration to that unit.
- B. Each catch basin modified shall be measured by the Engineer as a unit. All work performed on the catch basin will be considered as one modification to that unit.

4.2 PAYMENT

- A. The Contract price for "Alter Existing Manhole, Catch Basin or Drop Inlet" shall be a unit price for each catch basin, drop inlet or manhole altered and shall cover the cost of all labor, materials, equipment and insurance required or necessary to complete the alteration all in accordance with the plans and specifications and as directed by the Engineer.
- B. The Contract price for "Modify Existing Catch Basin with Conversion Slab" shall be a unit price for each catch basin modified and shall cover the cost of all labor, materials, equipment and insurance required or necessary to complete the modification, all in accordance with the plans and specifications and as directed by the Engineer.
- C. The Contractor's attention is called to the fact that any existing pavement, curbing, sidewalk, frames, grates, covers or granite curb inlets damaged during the process

of this work shall be replaced in accordance with these Contract Specifications, or as directed by the Engineer, and said cost shall be included in the Contract unit price for alterations and no additional payments will be made under any other item of work.

<u>Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1510.01	Alter Existing Manhole, Catch Basin Or Drop Inlet	EA

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

SECTION 1514 UNIFORMED TRAFFICMAN (FLAGGER)

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

- A. The Contract Drawings and the Greater New Haven Water Pollution Control Authority Standard Specifications apply to this Section of the Special Technical Specifications.

1.2 SUMMARY

- A. The Contractor shall keep the impacts to public traffic to a minimum. The Contractor may utilize the services of an outside firm to provide Uniformed Trafficman (Flagger) services on the Project to assist in directing pedestrian and vehicular traffic as necessary and when authorized by the Engineer. Trafficmen requested solely for the Contractor's operational needs will not be approved for payment.
- B. These services shall not be provided by the contractor's own personnel.
- C. Uniformed Trafficmen (Flaggers) shall be persons who have successfully completed flagger training by the American Traffic Safety Services Association (ATSSA), National Safety Council (NSC), or other programs approved by the Engineer. A copy of the Flagger's training certificate shall be provided to the Engineer before the Flagger performs any work on the project. Uniformed Flaggers shall conform to Chapter 6E, Flagger Control, in the Manual of Uniformed Traffic Control Devices (MUTCD) and shall wear high-visibility safety apparel. Use a STOP/SLOW paddle that is at least 18 inches (450 millimeters) in width with letters at least 6 inches (150 millimeters) high. The paddle shall be mounted on a pole of sufficient length to be 6 feet (1.8 meters) above the ground as measured from the bottom of the sign.
- D. Uniformed Flaggers will only be used on non-limited access highways to control traffic operations when authorized in writing by the Engineer.

PART 2-PRODUCTS

(None) PART 3 -

EXECUTION (None)

3.1 CONSTRUCTION METHODS

- A. Prior to the start of operations on the project requiring the use of Trafficmen, a meeting will be held with the Contractor, agency or firm providing the Trafficmen, Engineer, and State/Local Police, if applicable, to review the Trafficmen operations, lines of responsibility, and operating guidelines which will be used on the project.

- B. On a weekly basis, the Contractor shall inform the Engineer of their scheduled operations for the following week and the number of Trafficmen requested. The Engineer shall review this schedule and approve the type and number of Trafficmen required. In the event of an unplanned, emergency, or short-term operation, the Engineer may approve the temporary use of properly clothed persons for traffic control until such time as an authorized Trafficman may be obtained. In no case shall this temporary use exceed 8 hours for any particular operation.
- C. If the Contractor changes or cancels any scheduled operations without prior notice of same as required by the agency providing the Trafficmen, and, as a result, Trafficmen services are no longer required, the Contractor will be responsible for payment at no cost to the Authority of any show-up cost for any Trafficman not used because of the change. Exceptions, as approved by the Engineer, may be granted for adverse weather conditions and unforeseeable causes beyond the control and without the fault or negligence of the Contractor.
- D. Trafficmen assigned to a work site are to only take direction from the Contractor with the approval of the Engineer.
- E. Trafficmen shall wear a high visibility safety garment that complies with OSHA, MUTCD and ASTM Standards, and the safety garment shall have the words "Traffic Control" clearly visible on the front and rear panels (minimum letter size 2 inches (50 millimeters)). Worn/faded safety garments that are no longer highly visible shall not be used. The Engineer shall direct the replacement of any worn/faded garment at no cost to the Authority.
- F. A Trafficman shall assist in implementing the traffic control measures specified in the Maintenance and Protection of Traffic Plan contained elsewhere in these Specifications or as directed by the Engineer.

PART 4-MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Services of Trafficmen will be measured for payment by the actual number of hours for each person rendering services approved by the Engineer. These services shall include, however, only such Trafficmen as are employed within the limits of construction, right of way of the Project or along detours authorized by the Engineer to assist the motoring and or pedestrian public through the construction work zone. Services for continued use of a detour or bypass beyond the limitations approved by the Engineer, for movement of construction vehicles and equipment, or at locations where traffic is unnecessarily restricted by the Contractor's method of operation, will not be measured for payment.
- B. Trafficmen shall not work more than twelve hours in anyone 24-hour period. In case such services are required for more than twelve hours, additional Trafficmen shall be furnished and measured for payment. In cases where the Trafficman is an employee on the Contractor's payroll, payment under the item

"Uniformed Trafficman (Flagger)" will be made only for those hours when the Contractor's employee is performing Engineer approved Trafficman services.

C. Travel time and mileage fees associated with Trafficmen services shall not be measured for payment.

D. Safety garments and STOP/SLOW paddles will not be measured for payment.

4.2 PAYMENT

A. Uniformed Trafficmen (Flaggers) will be paid in accordance with the Engineer approved schedule described in 3.1 B above. All costs associated with travel time, mileage, safety garments and STOP/SLOW paddles shall be considered included in the general cost of the work.

B. Uniformed Flaggers will be paid for at the Contract unit price bid per hour for "Uniformed Trafficman (Flagger)", which price shall include all compensation, insurance benefits and any other cost or liability incidental to the furnishing of the trafficmen ordered.

<u>Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1514	Uniformed Trafficman (Flagger)	HR

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

SECTION 1620 OBSERVATION WELL DECOMMISSIONING

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide labor, materials, tools and equipment for decommissioning monitoring wells, including grouting, and submitting reports, as indicated. Monitoring wells include observation wells and vibrating wire piezometers installed in roadway boxes. These monitoring wells were installed during different phases of subsurface investigations during design.
- B. Unless otherwise indicated, Contractor shall decommission approximately seven pre-existing observation wells and approximately two piezometers indicated on the drawings and in the Geotechnical Data Report as well as all observation wells and piezometers installed by the Contractor at completion of the project when given written authorization by the Engineer.

1.02 SUBMITTALS:

- A. Monitoring well decommissioning reports shall be provided to the Engineer within one (1) week following the decommissioning.
- B. As work progresses, the Contractor shall keep complete, neat, accurate and legible record of each monitoring well decommissioning. The report shall be a complete and accurate record of the entire decommissioning procedure. At a minimum, the following information shall be provided:
 - 1. Monitoring well name/number
 - 2. A map showing the location of the decommissioned well
 - 3. Date constructed
 - 4. Date abandoned
 - 5. Depth to static water (prior to decommissioning)
 - 6. Total depth sealed
 - 7. Quantity of sealing material used
 - 8. Description of surface restoration

PART 2 - PRODUCTS

2.01 MATERIALS:

- C. Bentonite/Portland Cement Grout.
 - 1. Mix grout using not more than 7 gallons of water per 94 lb. bag of Portland Type I Cement. Use 3 to 5 lbs. of bentonite powder per bag of cement. Mix water with bentonite prior to adding cement.

PART 3 - EXECUTION

3.01 MONITORING WELLS TO BE DECOMMISSIONED

- A. At the completion of construction, and upon approval by the Engineer, the Contractor shall decommission the following existing monitoring wells:
1. B-012-3
 2. B-020-3
- B. In addition, all monitoring wells installed by the Contractor shall also be decommissioned at the completion of construction.

3.02 DECOMMISSIONING PROCEDURE:

- A. Mix grout, as specified, until free of lumps.
- B. Calculate the volume of grout that will be needed and mix 25 to 50% more grout than the calculated volume.
- C. Pump cement grout through a tremie pipe discharging at the bottom of the observation well screen to ground surface.
- D. Restore surface.
1. Cut off the top 2 ft. of well pipe. Cut and remove all wires from piezometers.
 2. Remove roadway box, compact disturbed subgrade, place and compact crushed aggregate base course to bottom asphalt pavement.
 3. Finish surface consistent with adjacent cross-section for cast-in-place concrete sidewalk, hot mix asphalt pavement in accordance with City roadway requirements or loam and seed.

PART 4 – MEASUREMENT AND PAYMENT

Payment shall be for each well decommissioned.

<u>Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1620	Monitoring Well Decommissioning	EA

TABLE OF CONTENTS

APPENDICIES

Appendix A – Geotechnical Data Report

Appendix B – Not Used

Appendix C – Test-Pits

Appendix D – Buckeye Pipeline – Right of way use restrictions

Appendix E – City of New Haven Plan Approval

**NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY**

APPENDIX A –

GEO TECHNICAL DATA REPORT

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

GEOTECHNICAL DATA REPORT

Subsurface Investigation Results for the GNHWPCA Regulator 012 & 020 Relief Sewers Project New Haven, CT

I. INTRODUCTION

This Geotechnical Data Report (GDR) is prepared in support of the construction and design of the Greater New Haven Water Pollution Control Authority (GNHWPCA) Regulator 012 and 020 Relief Sewers project located in New Haven, CT. Geologic Earth Exploration, Inc. of Norfolk, MA performed the drilling from May 23 to June 7, 2016. The drilling was observed by an AECOM representative. The locations of the test borings are shown on the Contract Drawings.

II. EXPLORATION PROGRAM

A total of twelve (12) test borings for the proposed project were drilled. The test boring depths range from 11.0 to 24.3 feet below the ground surface. Standard split spoon samples were collected as indicated on boring logs.

Two (2) test borings (B-012-03 and B-020-03) were converted to monitoring wells at 20 ft depth below the ground surface as noted on boring logs. The monitoring wells were constructed using 2-inch diameter Schedule 40 screen and riser, a sand pack and bentonite seal, and flushmount roadway protective boxes that were concreted into place. Subsequent readings taken on July 14 and August 11, 2016 are provided in the following table:

Monitoring Well No.	Groundwater Depth (in feet, 7-14-16)	Groundwater Depth (in feet, 8-11-16)
B-012-03	14.0	14.6
B-020-03	15.3	15.3

Depth to groundwater table was measured during drilling and noted on the boring logs. Groundwater levels may fluctuate with precipitation, season, construction activities, run-off controls, and other factors. As a result, water levels during construction may vary from those observed during the subsurface investigation.

All other boreholes were backfilled with cuttings, tamped and topped with an asphalt patch. All borehole logs and well installation logs from the exploration program are provided in Attachment 1.

III. FIELD PERMEABILITY FALLING HEAD TEST

Falling head tests were performed during drilling in boreholes B-012-2, B-012-05 and B-020-07. Tests were typically performed when the borehole was advanced to the designated depths within the casing. The borehole was cleaned out to the bottom of the casing prior to testing. The casing was filled with water and the drop of the water column was measured at regular intervals. Once that test was completed, a split spoon sample was taken. A second falling head test was then performed after the sampling equipment was removed. Two-stage falling head tests were conducted in B-012-2 and B-020-07. Falling head tests were only conducted in B-012-05 after a split spoon sample was taken. The detailed results of the completed tests are provided in Attachment 2.

IV. LABORATORY TESTING

A laboratory testing program consisting of nine (9) Grain Size Analyses was performed by GeoTesting Express, Inc. of Acton, MA. The submitted report is provided as Attachment 3.

(Date: August, 2016)

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

**ATTACHMENT 1
TEST BORING LOGS**

Exploration Location

NORTHING: 677,939.7 EASTING: 956,684.56 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 24.1
 LOCATION: Nicoll St and Canner St ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG**B-012-01**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/23/2016 - 5/25/2016 TOTAL DEPTH (FT): 21.0
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Gabriel Knight
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): Indeterminate due to drive and wash method.
 GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_p = Pocket Torvane Shear Strength
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD				
									Air Knife for utility clearance		
									Brown, medium sand (SP), little coarse sand, trace gravel.		
5			SS-1		5 to 7	24/9	52-35-54-97	PID= 0.0 ppm	Top 5": Black, fine to medium sand (SP), trace medium gravel, damp. Bottom 4": Dark brown, medium sand (SP), some fine sand, little medium gravel, damp.		
10			SS-2		10 to 12	24/8	59-30-27-28	PID= 0.0 ppm	Yellowish red, well graded gravel (GW-GM), some fine to coarse sand, few fines, moist.		
15			SS-3		15 to 17	24/0	32-14-6-8	PID= 0.0 ppm	No recovery. Gravel 1-4 mm observed from wash.		
20			SS-4		19 to 21	24/14	8-9-11-12	PID= 0.0 ppm	Reddish brown, fine sand and silt (SM).		
									End of Boring at 21 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 677,843.86 EASTING: 956,671.15 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 25.0
 LOCATION: 235 Nicoll St ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG

B-012-02

PAGE 1 of 1

Drilling Information

DATE START / END: 5/23/2016 - 5/26/2016 TOTAL DEPTH (FT): 21.0
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): As indicated.
 GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_v = Pocket Torvane Shear Strength
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD				
								PID= 0.0 ppm	Air Knife for utility clearance		
5	20		SS-1		5 to 7	24/13	40-100- 25*-35*	PID= 0.0 ppm	Dark brown, medium sand (SP), some large cobbles, trace orange sand and gravel, damp.		Note: last two blow counts are obtained using 300-lb hammer.
10	15		SS-2		10 to 12	24/9	30-100- 21-104	PID= 0.0 ppm	Clean medium gravel (GP), some coarse gravel, sub-angular, sub-rounded.		
			SS-3		12 to 14	24/23	NA	PID= 0.0 ppm	Reddish brown, medium to coarse gravel (GP), some coarse sand, poorly sorted, wet.	▽	Note: No blow counts.
15	10		SS-4		15 to 17	24/11	12-15- 16-17	PID= 0.0 ppm	Reddish brown, silt and fine to medium sand (SM), wet.		
20	5		SS-5		19 to 21	24/4	12-13- 11-17	PID= 0.0 ppm	Reddish brown silt (ML), with black angular gravel.		
									End of Boring at 21 feet		

Stratification lines represent approximate
 boundary between soil types, transitions may
 be gradual. Water level readings have been
 made at times and under conditions stated.
 Fluctuations of groundwater may occur due to
 other factors than those present at the time
 measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 677,616.22 EASTING: 956,504.61 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 26.5
 LOCATION: Nicoll St and Willow St ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG**B-012-03**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/23/2016 - 5/27/2016 TOTAL DEPTH (FT): 21.0
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): As indicated.
 GENERAL NOTES: Borehole converted into a monitoring well upon completion. Refer to well installation logs for details.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector Q_p = Pocket Penetrometer Strength
 S_v = Pocket Torvane Shear Strength F_v = Field Vane Shear Strength
 NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD				
25								PID= 0.0 ppm	Air Knife for utility clearance		
5			SS-1		5 to 7	24/23	27-61- 100-51	PID= 0.0 ppm	Dark brown, medium sand (SP), little fines, trace gravel.		
20									Mottled yellow gray, fine to coarse gravel (GP), sub-angular, sub-rounded, some medium sand.		
10			SS-2		10 to 12	24/13	30-67- 65-64	PID= 0.0 ppm	Mottled red and tan, coarse sand and fine to medium gravel (GP), some large rock fragments.		
15											
15			SS-3		15 to 17	24/6	31-17- 21-23	PID= 0.0 ppm	Red sandy silt (ML), some fine sand, mostly silt, few clay, non-plastic, wet.		
10											
20			SS-4		19 to 21	24/13	4-3-3-6	PID= 0.0 ppm	Fine sand and silt (SM), wet.		
5									End of Boring at 21 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 677,440.76 EASTING: 956,757.71 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 27.8
 LOCATION: Willow St and Nash St ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG**B-012-04**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/23/2016 - 5/31/2016 TOTAL DEPTH (FT): 21.0
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): As indicated.
 GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_v = Pocket Torvane Shear Strength
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD				
								PID= 0.0 ppm	Air Knife for utility clearance		
25									Dark brown, medium and coarse sand (SP), little coarse gravel.		
5			SS-1		5 to 7	24/20	12-30-37-25	PID= 0.4 ppm	Coarse sand and fine to medium gravel (GP), little coarse gravel, trace rock fragments, trace fines, wet.	▽	
20											
10			SS-2		10 to 12	24/11	20-39-18-12	PID= 0.0 ppm	Sand (SW-SM), some fine to medium gravel, few to little fines.		
15											
15			SS-3		15 to 17	24/10	26-26-26-16	PID= 0.0 ppm	Dark reddish brown sand (SW-SM), some fine to coarse gravel, few to little fines, wet.		
10											
20			SS-4		19 to 21	24/13	11-15-5-7	PID= 0.3 ppm	Sand (SW-SM), some fine to medium gravel, few to little fines, trace rock fragments.		
									End of Boring at 21 feet		
5											

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 677,382.82 EASTING: 956,992.92 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 20.3
 LOCATION: Willow St and Mitchell Dr ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG**B-012-05**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/23/2016 - 6/1/2016 TOTAL DEPTH (FT): 21.0
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): As indicated.
 GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_v = Pocket Torvane Shear Strength
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD	PID Readings			
20								PID= 0.0 ppm	Air Knife for utility clearance		
5	15		SS-1		5 to 7	24/24	15-37- 38-49	PID= 0.0 ppm	Reddish brown, medium and coarse sand (SP), some medium gravel, moist.		
10	10		SS-2		10 to 12	24/7	16-20- 4-12	PID= 0.0 ppm	Dark reddish brown gravel with silt and sand (GP-GM), some fine to coarse sand, few to little fines, some rock fragments.		
15	5		SS-3		15 to 17	24/5	12-10- 8-9	PID= 0.0 ppm	Medium to coarse angular gravel with silt and sand (GP-GM), with 1" reddish brown coarse sand, few to little fines.	▽	
20	0		SS-4		19 to 21	24/13	4-5-4-6	PID= 0.0 ppm	Medium sand (SP), well sorted, angular, with clean gravel.		
									Silt (ML), with some gravel.		
									End of Boring at 21 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 672,341 EASTING: 962,239.13 STATION: OFFSET:
HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 23.8
LOCATION: Quinnipiac Ave ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG

B-020-01

PAGE 1 of 1

Drilling Information

DATE START / END: 5/25/2016 - 6/7/2016 TOTAL DEPTH (FT): 24.3
CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
WATER LEVEL DEPTHS (ft): As indicated.
GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_p = Pocket Torvane Shear Strength
Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD	PID Readings			
								PID= 0.0 ppm	Air Knife for utility clearance		
5	20		SS-1		5 to 7	24/16	6-6-10- 9	PID= 0.0 ppm	Dark brown, medium sand (SP), some coarse sand, little medium gravel, damp		
10	15		SS-2		10 to 10.71	9/9	35- 65/2.5"	PID= 0.0 ppm	Reddish brown, medium sand and silt (SC), some clay, trace gravel, moist.		
15	10		SS-3		15 to 15.36	7/7	70- 150/2"	PID= 0.0 ppm	Reddish brown, silty and clayey sand with gravel (SC-SM), some fine to coarse gravel, few to little fines, moist.		
20	5		SS-4		20 to 20.17	2/2	65/2"	PID= 0.0 ppm	Red, coarse sand (SC), some clay, wet.		
25	0		SS-5		24 to 24.29	4/3	75/3.5"		Red, coarse sand (SC-SM), some silt, some clay, wet.		
	-5								End of Boring at 24.3 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
CITY/STATE: New Haven/CT
AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 672,523.31 EASTING: 962,304.31 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 24.5
 LOCATION: Quinnipiac Ave ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG**B-020-02**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/25/2016 - 6/2/2016 TOTAL DEPTH (FT): 19.2
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): As indicated.
 GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_p = Pocket Torvane Shear Strength
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD	PID Readings			
								PID= 0.0 ppm	Air Knife for utility clearance		
									Dark brown, silty sand (SM), some fine gravel, trace coarse gravel, damp.		
5	20		SS-1		5 to 7	24/19	11-19-16-21	PID= 0.0 ppm	Dark brown, silty and clayey sand (SC-SM), mostly fine to coarse sand, little silt, few to little clay, moist.		
10	15		SS-2		10 to 12	24/12	15-19-18-24	PID= 0.0 ppm	Dark reddish brown, silty and clayey sand (SC-SM), mostly fine to coarse sand, trace fine gravel, little silt, few to little clay, moist.		
15	10		SS-3		15 to 16.17	14/13	57-36-100/2"	PID= 0.0 ppm	Reddish brown, fine sand and silt (SM), little medium sand, trace coarse sand, moist to wet.	▽	
20	5		SS-4		19 to 19.17	2	100/2"	PID= 0.0 ppm	Reddish brown silt (ML), some fine sand, little medium sand, wet.		
									End of Boring at 19.2 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 672,903.83 EASTING: 962,438.76 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 21.0
 LOCATION: Quinnipiac Ave ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG**B-020-03**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/25/2016 - 6/2/2016 TOTAL DEPTH (FT): 21.0
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): As indicated.
 GENERAL NOTES: Borehole converted into a monitoring well upon completion. Refer to well installation logs for details.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_p = Pocket Torvane Shear Strength
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD				
20								PID= 0.0 ppm	Air Knife for utility clearance		
5			SS-1		5 to 7	24/16	4-8-12- 13	PID= 0.2 ppm	Dark brown, silty sand (SM), some medium gravel, trace coarse gravel, damp.		
15									Dark brown, silty and clayey sand (SC-SM), mostly fine to coarse sand, few fine gravel, little silt, little clay, moist		
10			SS-2		10 to 12	24/3	17-27- 27-20	PID= 0.0 ppm	Brown fine sand (SM), some silt, little coarse sand and fine gravel, moist.	▽	Note: recovery may be collapsed soils higher in borehole.
15			SS-3		15 to 17	24/17	11-5- 12-17	PID= 0.0 ppm	Dark brown, fine sand (SM), some medium sand, little silt, clay lense approximately 2" thick located 10" from the top of spoon, wet.		
20			SS-4		19 to 21	24/15	45-35- 34-30	PID= 0.0 ppm	Brown medium sand (SM), some fine sand, little silt, trace coarse sand, wet.		
0									End of Boring at 21 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 673,170.5 EASTING: 962,639.56 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 18.7
 LOCATION: Quinnipiac Ave and E Grand Ave ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG**B-020-04**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/25/2016 - 6/3/2016 TOTAL DEPTH (FT): 16.0
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): As indicated.
 GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_v = Pocket Torvane Shear Strength
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD	PID Readings			
									Air Knife for utility clearance No samples collected.		
5			SS-1		5 to 7	24/13	20-21-21-20	PID= 0.2 ppm	Fine sand and silt (SM), some coarse sand, trace fine gravel, wet.	▽	
10			SS-2		10 to 12	24/14	10-11-11-12	PID= 1.2 ppm	Coarse sand (SM), some silt, little fine to medium gravel, wet.		
15			SS-3		14 to 16	24/17	12-15-12-18	PID= 230 ppm	Top 13": Coarse sand, little silt, trace fine gravel. Bottom 4": Silt and clay (ML-CL), little fine to medium sand.		
									End of Boring at 16 feet		
0											
20											
-5											

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNH/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 673,286.52 **EASTING:** 962,743.18 **STATION:** **OFFSET:**
HORIZONTAL DATUM: NAD 1983/92 **INCLINATION FROM VERTICAL:** 0 deg
VERTICAL DATUM: NAVD 1988 **GROUND SURFACE ELEV. (FT):** 17.3
LOCATION: Quinnipiac Ave **ESTIMATED/SURVEYED?:** Estimated

GEOLOGIC LOG**B-020-05**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/24/2016 - 6/3/2016 **TOTAL DEPTH (FT):** 14.5
CONTRACTOR: Geologic **DRILLER:** Matt/John **LOGGED BY:** Danielle Hare
EQUIPMENT: Acker Soil-Scout **EXPLORATION TYPE/METHOD:** HW Casing/Drive and Wash
AUGER ID/OD: Not Used **CASING ID/OD:** 4 in ID **CORE INFORMATION:** Not Used
HAMMER TYPE: Donut **HAMMER WEIGHT (lbs):** 140 **HAMMER DROP (inch):** 30
WATER LEVEL DEPTHS (ft): As indicated.
GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_p = Pocket Torvane Shear Strength
Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD	PID Readings			
									Air Knife for utility clearance. No samples collected.		
5			SS-1		5 to 7	24/12	7-5-9-7	PID= 0.1 ppm	Top 9": Medium to coarse gravel (GP), sub-angular, little fine sand, trace shells. Bottom 8": Tan to red, medium sand and silt (SM), some fine sand, wet.		
10			SS-2		10 to 12	24/10	35-36- 01-81	PID= 0.0 ppm	Top 5": Coarse sand (SM), some silt, trace clay, trace rock fragments. Bottom 5": Silt and fine sand (ML).		
15			SS-3		14 to 14.5	6	120/6"	PID= 0.0 ppm	Coarse Sand (SM), some silt, trace clay. End of Boring at 14.5 feet		Switched to 300-lb hammer after 6", spoon refused at 14.5 feet depth.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
CITY/STATE: New Haven/CT
AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 673,563.32 EASTING: 963,013.58 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 15.9
 LOCATION: Quinnipiac Ave and Clifton St ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG**B-020-06**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/25/2016 - 6/6/2016 TOTAL DEPTH (FT): 11.0
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): As indicated.
 GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_p = Pocket Torvane Shear Strength
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD				
15								PID= 0.0 ppm	Air Knife for utility clearance		
5			SS-1		5 to 7	24/14	6-33- 19-16	PID= 0.0 ppm	Dark brown, coarse and medium sand (SP), some fine gravel, damp.		
10			SS-2		9 to 11	24/20	23-16 22-21		Dark reddish brown, silty and clayey sand (SC-SM), few to little gravel, few to little silt, moist.		
10									Coarse sand (SP), some medium sand, trace silt, trace clay, trace medium gravel, medium stiff, wet.		
5									End of Boring at 11 feet		
15											
20											
-5											

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNHW/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

Exploration Location

NORTHING: 673,638.72 EASTING: 963,101.13 STATION: _____ OFFSET: _____
 HORIZONTAL DATUM: NAD 1983/92 INCLINATION FROM VERTICAL: 0 deg
 VERTICAL DATUM: NAVD 1988 GROUND SURFACE ELEV. (FT): 18.5
 LOCATION: Quinnipiac Ave ESTIMATED/SURVEYED?: Estimated

GEOLOGIC LOG**B-020-07**

PAGE 1 of 1

Drilling Information

DATE START / END: 5/24/2016 - 6/6/2016 TOTAL DEPTH (FT): 15.0
 CONTRACTOR: Geologic DRILLER: Matt/John LOGGED BY: Danielle Hare
 EQUIPMENT: Acker Soil-Scout EXPLORATION TYPE/METHOD: HW Casing/Drive and Wash
 AUGER ID/OD: Not Used CASING ID/OD: 4 in ID CORE INFORMATION: Not Used
 HAMMER TYPE: Donut HAMMER WEIGHT (lbs): 140 HAMMER DROP (inch): 30
 WATER LEVEL DEPTHS (ft): As indicated.
 GENERAL NOTES: Borehole backfilled upon completion.

ABBREVIATIONS: ID = Inside Diameter bpf = Blows per Foot ST = Undisturbed Tube Sample WOR = Weight of Rods Q_p = Pocket Penetrometer Strength
 OD = Outside Diameter mpf = Minute per Foot RC = Rock Core WOH = Weight of Hammer S_p = Pocket Torvane Shear Strength
 Pen. = Penetration Length S = Sample FVS = Field Vane Shear RQD = Rock Quality Designation F_v = Field Vane Shear Strength
 Rec. = Recovery Length SC = Sonic Core PID = Photoionization Detector NA, NM = Not Applicable, Not Measured

Depth (ft)	Elev. (ft)	Casing Pen. (bpf) or Core Rate (mpf)	SAMPLE INFORMATION					GRAPHIC LOG	Sample Description & Classification	H ₂ O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blows Count or RQD	PID Readings			
								PID= 0.0 ppm	Air Knife for utility clearance		
									Brown, fine sand (SP), little cobbles, trace coarse sand, damp.		
5			SS-1		5 to 7	24/18	11-8-6-9	PID= 0.1 ppm	Dark reddish brown, silty and clayey sand (SC-SM), few fine gravel, trace white platy fibrous inclusions, little silt, few clay.		
10			SS-2		10 to 12	24/24	16-17-12-27	PID= 0.3 ppm	Top 13": Coarse sand (SM), some fine sand and silt, wet. Bottom 11": Fine sand and silt (SC), some clay, moist.	▽	
15			SS-3		14 to 16	24/11	60-120/5.5"	PID= 0.0 ppm	Medium sand (SC), little silt, little clay, trace fine gravel, very dense. End of Boring at 15 feet		
0											
20											
-5											

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

LOGGED BY (Consultant): AECOM
 PROJECT NAME: GNH/PCA Relief Sewer - 012 & 020
 CITY/STATE: New Haven/CT
 AECOM PROJECT NUMBER: 60494415

AECOM

MONITORING WELL INSTALLATION LOG

PROJECT: GNHWPCA Relief Sewer - 012 & 020		JOB NO. 60494415	WELL NO. B-012-03
DRILLING CONTRACTOR: Geologic		COORDINATES: N677616.22, E956504.61	
BEGUN: 5/27/2016	GEO./ENG.: D. Hare		WATER LEVEL (Depth/Elev.) See Table
FINISHED: 5/27/2016	DRILLER: Matt/John		

	DEPTH (FT)	ELEV. (FT)
FLUSHMOUNT SURFACE CASING: DIA.: <u>24 inch</u> TYPE: <u>Roadbox</u>	0.0	26.5
GROUND SURFACE TOP OF PVC RISER BOTTOM OF PROTECTIVE PIPE	1.8	24.7
PVC RISER CASING: SCH.: <u>40</u> DIAM.: <u>2 inch</u> BACKFILL MATERIAL: TYPE: <u>Cuttings</u>	6.0	20.5
ANNULAR SEAL MATERIAL: TYPE: <u>Bentonite</u>	8.0	18.5
TOP OF ANNULAR SEAL TOP OF FILTER PACK TOP OF WELL SCREEN	10.0	16.5
PVC SCREEN: SCH.: <u>40</u> DIAM.: <u>2 inch</u> SLOT SIZE: <u>0.10 inch</u>	20.0	6.5
FILTER PACK TYPE: <u>No. 1 Sand</u>	20.0	6.5
BOTTOM OF SCREEN BOTTOM OF FILTER PACK BOTTOM OF HOLE	21.0	5.5

METHOD DRILLED: Drive and Wash

METHOD/TIME DEVELOPED: _____

8 inch
(DIAM.)

Notes:

MONITORING WELL INSTALLATION LOG

PROJECT: GNHWPCA Relief Sewer - 012 & 020		JOB NO. 60494415	WELL NO. B-020-03
DRILLING CONTRACTOR: Geologic		COORDINATES: N672903.83, E962438.76	
BEGUN: 6/2/2016	GEO./ENG.: D. Hare		WATER LEVEL (Depth/Elev.) See Table
FINISHED: 6/2/2016	DRILLER: Matt/John		

	DEPTH (FT)	ELEV. (FT)
FLUSHMOUNT SURFACE CASING: DIA.: <u>24 inch</u> TYPE: <u>Roadbox</u>	0.0	21.0
GROUND SURFACE		
TOP OF PVC RISER		
BOTTOM OF PROTECTIVE PIPE	1.8	19.2
PVC RISER CASING: SCH.: <u>40</u> DIAM.: <u>2 inch</u>		
BACKFILL MATERIAL: TYPE: <u>Cuttings</u>		
TOP OF ANNULAR SEAL	6.0	15.0
ANNULAR SEAL MATERIAL: TYPE: <u>Bentonite</u>		
TOP OF FILTER PACK	8.0	13.0
TOP OF WELL SCREEN	10.0	11.0
PVC SCREEN: SCH.: <u>40</u> DIAM.: <u>2 inch</u> SLOT SIZE: <u>0.10 inch</u>		
FILTER PACK TYPE: <u>No. 1 Sand</u>		
BOTTOM OF SCREEN	20.0	1.0
BOTTOM OF FILTER PACK	20.0	1.0
BOTTOM OF HOLE	21.0	0.0

METHOD DRILLED: Drive and Wash

METHOD/TIME DEVELOPED: _____

8 inch
(DIAM.)

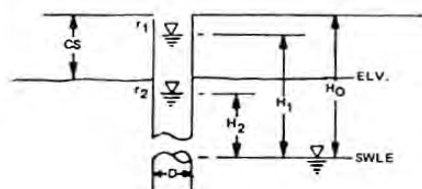
Notes:

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

**ATTACHMENT 2
FALLING HEAD TEST DATA**

FIELD PERMEABILITY - FALLING HEAD TEST

STAGE 1 CALCULATIONS (Before SPT)



D = 10.16 cm
CS = 1.50 ft
H₀ = 411.48 cm

D = Casing Diameter
CS = Casing Height
H₀ = Initial Water Head
K_m = Mean Coefficient of Permeability

Project: GNHWPCA
012-020 Relief Sewer
Location: New Haven, CT
Project No.: 60494415
Test No.: B-012-02
Depth: 19'

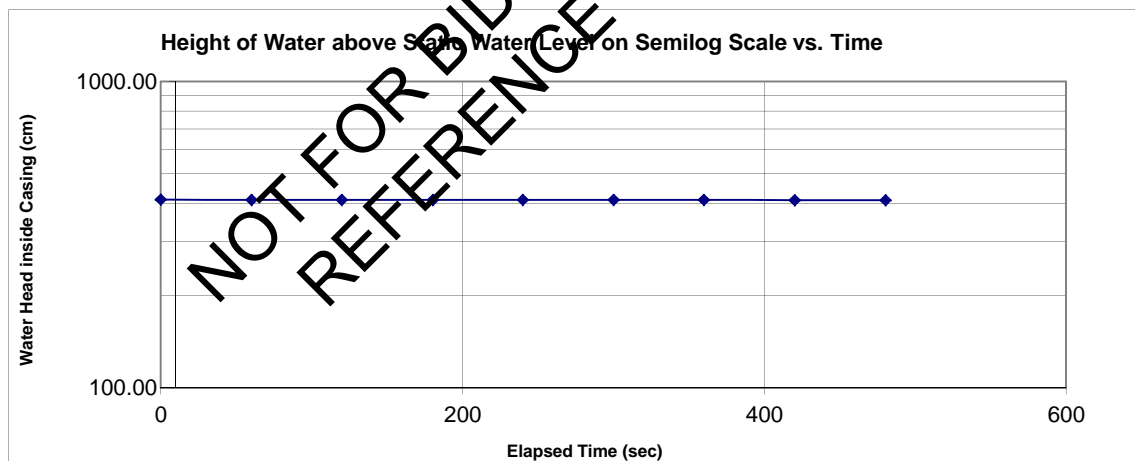
Calculations:

$$K_m = [3.14 * D / 11] * \ln(H_1 / H_2) / (t_2 - t_1)$$

$$K_m = 2.90 * \ln(H_1 / H_2) / (t_2 - t_1)$$

(Reference: Soil Mechanics by Lambe & Whitman, Page 285 Figure 19.4)

Date	Elapsed Time (sec.)	DROP (ft)	DROP (cm)	H (cm)	LN(H ₁ /H ₂)/Δt	K _m (cm/s)
5/26/2016						SETUP
	0	0	0.00	411.48	-	-
	60	0.013	0.40	411.08	1.6E-05	4.6E-05
	120	0.013	0.40	411.08		
	180	0.012	0.37	411.11		
	240	0.032	0.98	410.50	2.5E-05	7.2E-05
	300	0.031	0.95	410.66		
	360	0.028	0.86	410.60	2.5E-06	7.2E-06
	420	0.041	1.22	410.26	1.4E-05	3.9E-05
	480	0.058	1.77	409.71	2.2E-05	6.4E-05



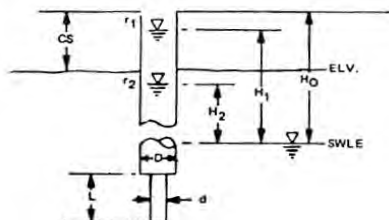
Recommended Value: K_m = 4.59E-05 cm/s

Notes: Test well intalled by Geologic. Data recorded by D.Hare.

Prepared by:	Danielle Hare	Reviewed by:	W. Song
--------------	---------------	--------------	---------

FIELD PERMEABILITY - FALLING HEAD TEST

STAGE 2 CALCULATIONS (After SPT)



d = 5.08 cm
D = 10.16 cm
CS = 1.50 ft
L = 60.96 cm
H₀ = 411.48 cm

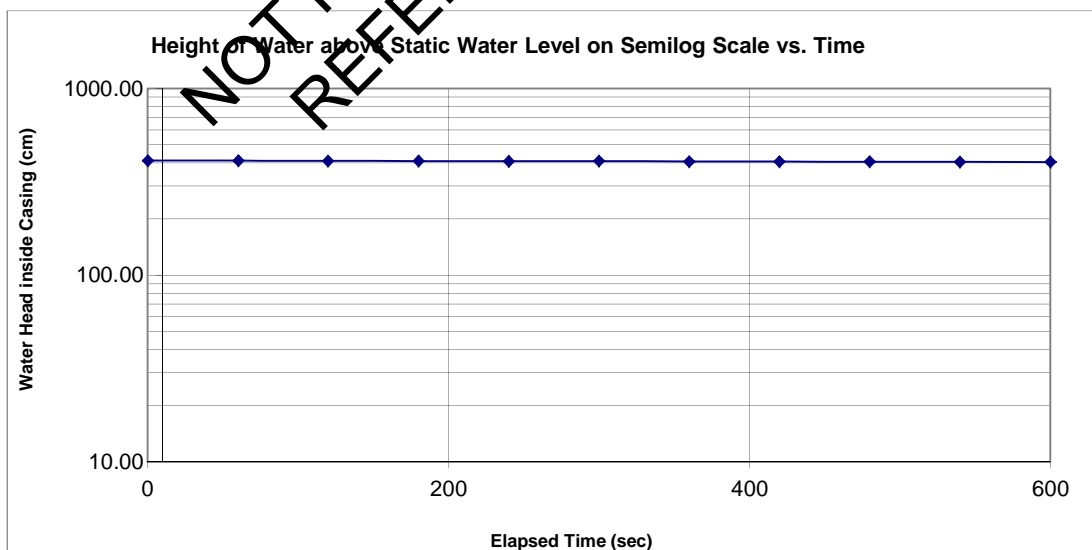
Project: GNHWPCA
012-020 Relief Sewer
Project No.: 60494415
Test No.: B-012-02
Depth: 19' - 21'

d = Sample Spoon Diameter
D = Casing Diameter
CS = Casing Height
L = Sample Spoon Length
H₀ = Initial Water Head
m = Transformation Ratio
K_h = Horizontal Permeability

Assume: m = (K_h/K_v)^{0.5} = 1.00
Calculations: K_h = [D² * Ln[mL/d + SQRT(1 + (mL/d)²)] / (8L)] * LN(H₁/H₂) / (t₂ - t₁)
K_h = 0.6731 * LN(H₁/H₂) / (t₂ - t₁)

(Reference: Soil Mechanics by Lambe & Whitman, Page 285 Figure 10.4)

Date	Elapsed Time (sec.)	DROP (ft)	DROP (cm)	H (cm)	LN(H ₁ /H ₂)/Δt	K _h (cm/s)
5/26/2016						SETUP
	0	0	0.00	411.48	-	-
	60	0.028	0.85	410.63	3.4E-05	2.3E-05
	120	0.056	1.65	409.93	2.9E-05	1.9E-05
	180	0.086	2.62	408.86	4.3E-05	2.9E-05
	240	0.111	3.38	408.10	3.1E-05	2.1E-05
	300	0.095	2.90	408.58		
	360	0.156	4.75	406.73	7.6E-05	5.1E-05
	420	0.168	5.73	405.75	4.0E-05	2.7E-05
	480	0.191	5.82	405.66	3.8E-06	2.5E-06
	540	0.226	6.89	404.59	4.4E-05	3.0E-05
	600	0.242	7.38	404.10	2.0E-05	1.4E-05



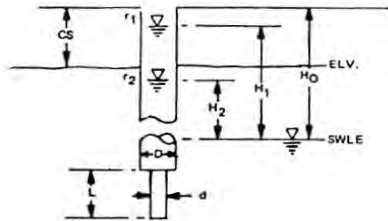
Recommended Value: K_h = 2.4E-05 cm/s*

Notes: Test well installed by Geologic. Data recorded by D.Hare.

Prepared by:	Danielle Hare	Reviewed by:	W. Song
--------------	---------------	--------------	---------

FIELD PERMEABILITY - FALLING HEAD TEST

STAGE 2 CALCULATIONS (After SPT)



d = 5.08 cm
D = 10.16 cm
CS = 1.50 ft
L = 60.96 cm
H₀ = 350.52 cm

Project: GNHWPCA
012-020 Relief Sewer
Project No.: 60494415
Test No.: B-012-05
Depth: 19' - 21'

d = Sample Spoon Diameter
D = Casing Diameter
CS = Casing Height
L = Sample Spoon Length
H₀ = Initial Water Head
m = Transformation Ratio
K_h = Horizontal Permeability

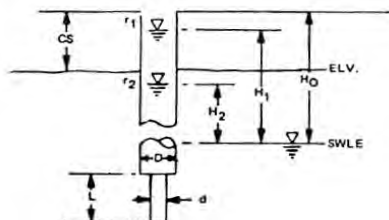
Assume: m = (K_h/K_v)^{0.5} = 1.00
Calculations: K_h = [D²*Ln[mL/d+SQRT(1+(mL/d)²]]/(8L))*LN(H₁/H₂)/(t₂-t₁)
K_h = 0.6731 *LN(H₁/H₂)/(t₂-t₁)

(Reference: Soil Mechanics by Lambe & Whitman, Page 285 Figure 10.4)

Date	Elapsed Time (sec.)	DROP (ft)	DROP (cm)	H (cm)	LN(H1/H2)/Δt	K _h (cm/s)
6/1/2016						SETUP
	0	0	0.00	350.52	-	-
	15	0.049	1.45	349.03	2.8E-04	1.9E-04
	30	0.084	2.56	347.96	2.0E-04	1.4E-04
	45	0.114	3.45	347.05	1.8E-04	1.2E-04
	60	0.153	4.66	345.86	2.3E-04	1.5E-04
	75	0.187	5.70	344.82	2.0E-04	1.3E-04
	90	0.221	6.74	343.78	2.0E-04	1.4E-04
	105	0.254	7.96	342.56	2.4E-04	1.6E-04
	120	0.298	9.08	341.44	2.2E-04	1.5E-04
	135	0.317	9.66	340.86	1.1E-04	7.6E-05
	150	0.367	11.19	339.33	3.0E-04	2.0E-04
	165	0.398	12.13	338.39	1.9E-04	1.3E-04
	180	0.436	13.29	337.23	2.3E-04	1.5E-04
	195	0.457	13.93	336.59	1.3E-04	8.5E-05
	210	0.494	15.06	335.46	2.2E-04	1.5E-04
	225	0.528	16.09	334.43	2.1E-04	1.4E-04
	240	0.556	16.95	333.57	1.7E-04	1.1E-04
	255	0.596	18.17	332.35	2.4E-04	1.6E-04
	270	0.631	19.23	331.29	2.1E-04	1.4E-04
	285	0.668	20.36	330.16	2.3E-04	1.5E-04
	300	0.696	21.21	329.31	1.7E-04	1.2E-04
	315	0.732	22.31	328.21	2.2E-04	1.5E-04
	330	0.764	23.29	327.23	2.0E-04	1.3E-04
	345	0.795	24.23	326.29	1.9E-04	1.3E-04
	360	0.829	25.27	325.25	2.1E-04	1.4E-04
	375	0.865	26.37	324.15	2.3E-04	1.5E-04
	390	0.896	27.31	323.21	1.9E-04	1.3E-04

FIELD PERMEABILITY - FALLING HEAD TEST

STAGE 2 CALCULATIONS (After SPT)



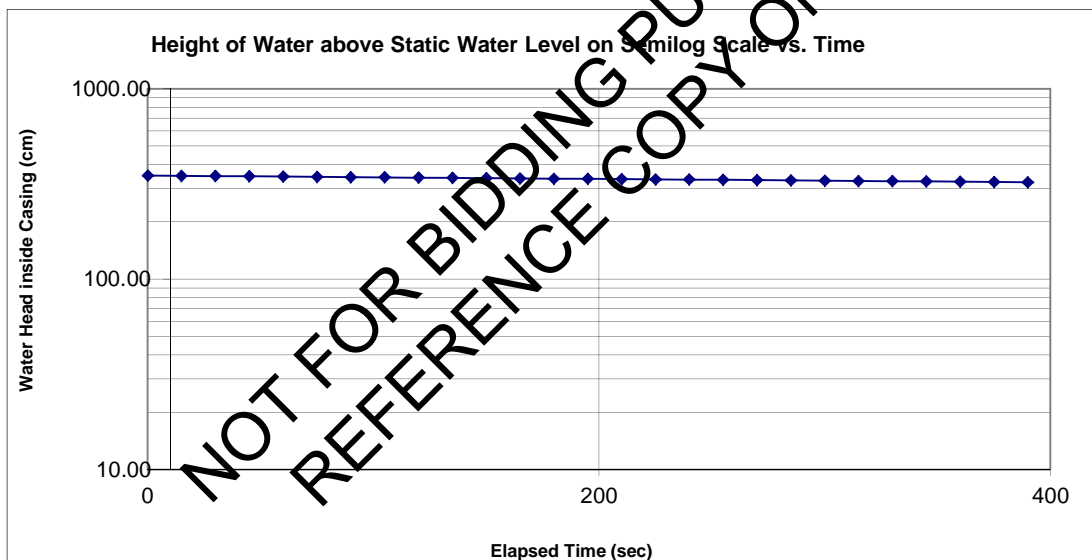
d = 5.08 cm
D = 10.16 cm
CS = 1.50 ft
L = 60.96 cm
H₀ = 350.52 cm

Project: GNHWPCA
012-020 Relief Sewer
Project No.: 60494415
Test No.: B-012-05
Depth: 19' - 21'

d = Sample Spoon Diameter
D = Casing Diameter
CS = Casing Height
L = Sample Spoon Length
H₀ = Initial Water Head
m = Transformation Ratio
K_h = Horizontal Permeability

Assume: $m = (K_h/K_v)^{0.5} = 1.00$
Calculations: $K_h = [D^2 \cdot \ln[mL/d + \text{SQRT}(1 + (mL/d)^2)] / (8L)] \cdot \ln(H_1/H_2) / (t_2 - t_1)$
 $K_h = 0.6731 \cdot \ln(H_1/H_2) / (t_2 - t_1)$

(Reference: Soil Mechanics by Lambe & Whitman, Page 285 Figure 10.4)



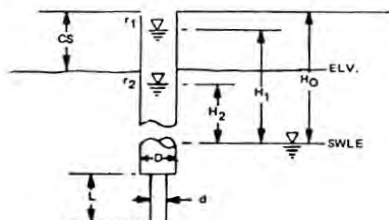
Recommended Value: $K_h = 1.4E-04 \text{ cm/s}^*$

Notes: Test well intalled by Geologic. Data recorded by D.Hare.

Prepared by:	Danielle Hare	Reviewed by:	W. Song
--------------	---------------	--------------	---------

FIELD PERMEABILITY - FALLING HEAD TEST

STAGE 2 CALCULATIONS (After SPT)



d = 5.08 cm
D = 10.16 cm
CS = 1.50 ft
L = 60.96 cm
H₀ = 350.52 cm

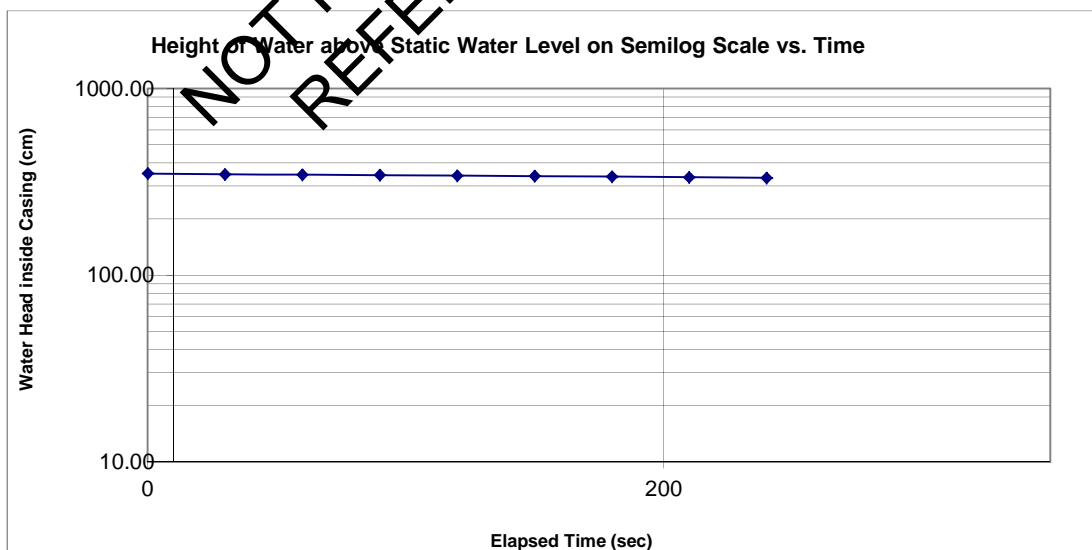
Project: GNHWPCA
012-020 Relief Sewer
Project No.: 60494415
Test No.: B-012-05
Depth: 19' - 21'

d = Sample Spoon Diameter
D = Casing Diameter
CS = Casing Height
L = Sample Spoon Length
H₀ = Initial Water Head
m = Transformation Ratio
K_h = Horizontal Permeability

Assume: m = (K_h/K_v)^{0.5} = 1.00
Calculations: K_h = [D²*Ln[mL/d+SQRT(1+(mL/d)²]]/(8L)*LN(H₁/H₂)/(t₂-t₁)
K_h = 0.6731 *LN(H₁/H₂)/(t₂-t₁)

(Reference: Soil Mechanics by Lambe & Whitman, Page 285 Figure 10.4)

Date	Elapsed Time (sec.)	DROP (ft)	DROP (cm)	H (cm)	LN(H ₁ /H ₂)/Δt	K _h (cm/s)
6/1/2016						SETUP
	0	0.00	0.00	350.52	-	-
	30	0.43	3.81	346.71	3.6E-04	2.5E-04
	60	0.71	5.08	345.44	1.2E-04	8.2E-05
	90	0.23	6.86	343.66	1.7E-04	1.2E-04
	120	0.29	8.69	341.63	2.0E-04	1.3E-04
	150	0.36	10.92	339.60	2.0E-04	1.3E-04
	180	0.44	13.46	337.06	2.5E-04	1.7E-04
	210	0.52	15.88	334.65	2.4E-04	1.6E-04
	240	0.59	18.03	332.49	2.2E-04	1.5E-04
	270	0.66	20.07	330.45	2.0E-04	1.4E-04
	300	0.73	22.23	328.30	2.2E-04	1.5E-04



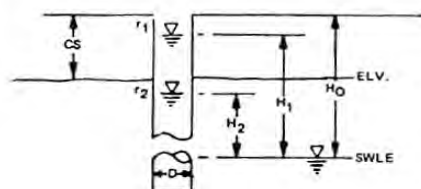
Recommended Value: K_h = 1.5E-04 cm/s*

Notes: Test well intalled by Geologic. Data recorded by D.Hare.

Prepared by:	Danielle Hare	Reviewed by:	W. Song
--------------	---------------	--------------	---------

FIELD PERMEABILITY - FALLING HEAD TEST

STAGE 1 CALCULATIONS (Before SPT)



D = 10.16 cm
CS = 1.50 ft
H₀ = 381.00 cm

D = Casing Diameter
CS = Casing Height
H₀ = Initial Water Head
K_m = Mean Coefficient of Permeability

Project: GNHWPCA
012-020 Relief Sewer
Location: New Haven, CT
Project No.: 60494415
Test No.: B-020-07
Depth: 14'

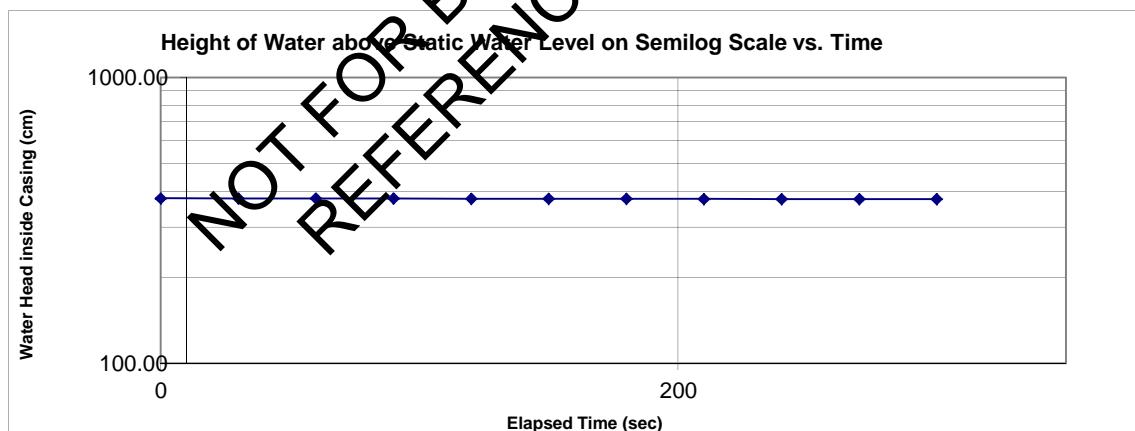
Calculations:

$$K_m = [3.14 * D / 11] * \ln(H_1 / H_2) / (t_2 - t_1)$$

$$K_m = 2.90 * \ln(H_1 / H_2) / (t_2 - t_1)$$

(Reference: Soil Mechanics by Lambe & Whitman, Page 285 Figure 19.4)

Date	Elapsed Time (sec.)	DROP (ft)	DROP (cm)	H (cm)	LN(H ₁ /H ₂)/Δt	K _m (cm/s)
6/6/2016						SETUP
	0	0.10	3.18	377.83	-	-
	30	0.12	3.51	377.43	2.9E-05	8.5E-05
	60	0.12	3.56	377.44	4.5E-06	1.3E-05
	90	0.13	3.81	377.19	2.2E-05	6.5E-05
	120	0.14	4.32	376.68	4.5E-05	1.3E-04
	150	0.14	4.33	376.63	4.5E-06	1.3E-05
	180	0.14	4.33	376.43	1.8E-05	5.2E-05
	210	0.17	5.08	375.92	4.5E-05	1.3E-04
	240	0.18	5.33	375.67	2.3E-05	6.5E-05
	270	0.18	5.59	375.41	2.3E-05	6.5E-05
	300	0.19	5.84	375.16	2.3E-05	6.5E-05



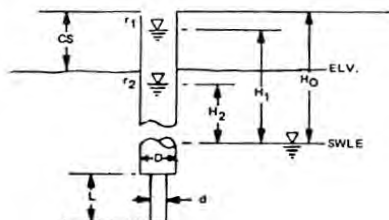
Recommended Value: K_m = 6.85E-05 cm/s

Notes: Test well intalled by Geologic. Data recorded by D.Hare.

Prepared by:	Danielle Hare	Reviewed by:	W. Song
--------------	---------------	--------------	---------

FIELD PERMEABILITY - FALLING HEAD TEST

STAGE 2 CALCULATIONS (After SPT)



d = 5.08 cm
D = 10.16 cm
CS = 1.50 ft
L = 29.26 cm
H₀ = 381.00 cm

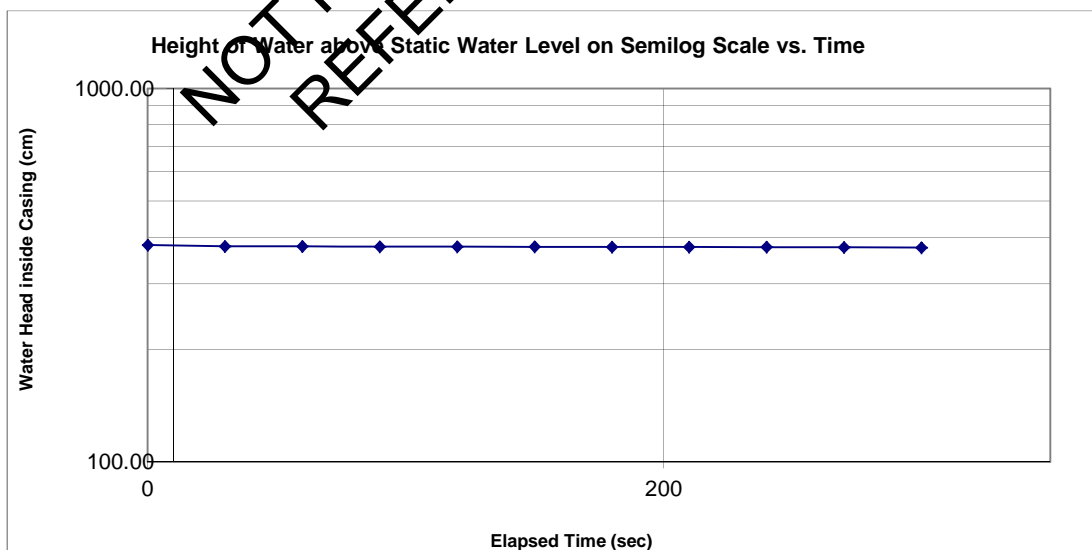
Project: GNHWPCA
012-020 Relief Sewer
Project No.: 60494415
Test No.: B-020-07
Depth: 14' - 14.96'

d = Sample Spoon Diameter
D = Casing Diameter
CS = Casing Height
L = Sample Spoon Length
H₀ = Initial Water Head
m = Transformation Ratio
K_h = Horizontal Permeability

Assume: m = (K_h/K_v)^{0.5} = 1.00
Calculations: K_h = [D²*Ln[mL/d+SQRT(1+(mL/d)²]]/(8L)*Ln(H₁/H₂)/(t₂-t₁)
K_h = 1.0811 *Ln(H₁/H₂)/(t₂-t₁)

(Reference: Soil Mechanics by Lambe & Whitman, Page 285 Figure 10.4)

Date	Elapsed Time (sec.)	DROP (ft)	DROP (cm)	H (cm)	LN(H ₁ /H ₂)/Δt	K _h (cm/s)
6/6/2016						SETUP
	0	0.10	3.00	381.00	-	-
	30	0.40	3.05	377.95	2.7E-04	2.9E-04
	60	0.73	3.18	377.83	1.1E-05	1.2E-05
	90	0.13	3.84	377.19	5.6E-05	6.1E-05
	120	0.14	3.94	377.06	1.1E-05	1.2E-05
	150	0.15	4.19	376.81	2.2E-05	2.4E-05
	180	0.16	4.45	376.56	2.2E-05	2.4E-05
	210	0.17	4.83	376.17	3.4E-05	3.6E-05
	240	0.18	5.08	375.92	2.3E-05	2.4E-05
	270	0.20	5.59	375.41	4.5E-05	4.9E-05
	300	0.20	5.97	375.03	3.4E-05	3.7E-05



Recommended Value: K_h = 5.7E-05 cm/s*

Notes: Test well intalled by Geologic. Data recorded by D.Hare.

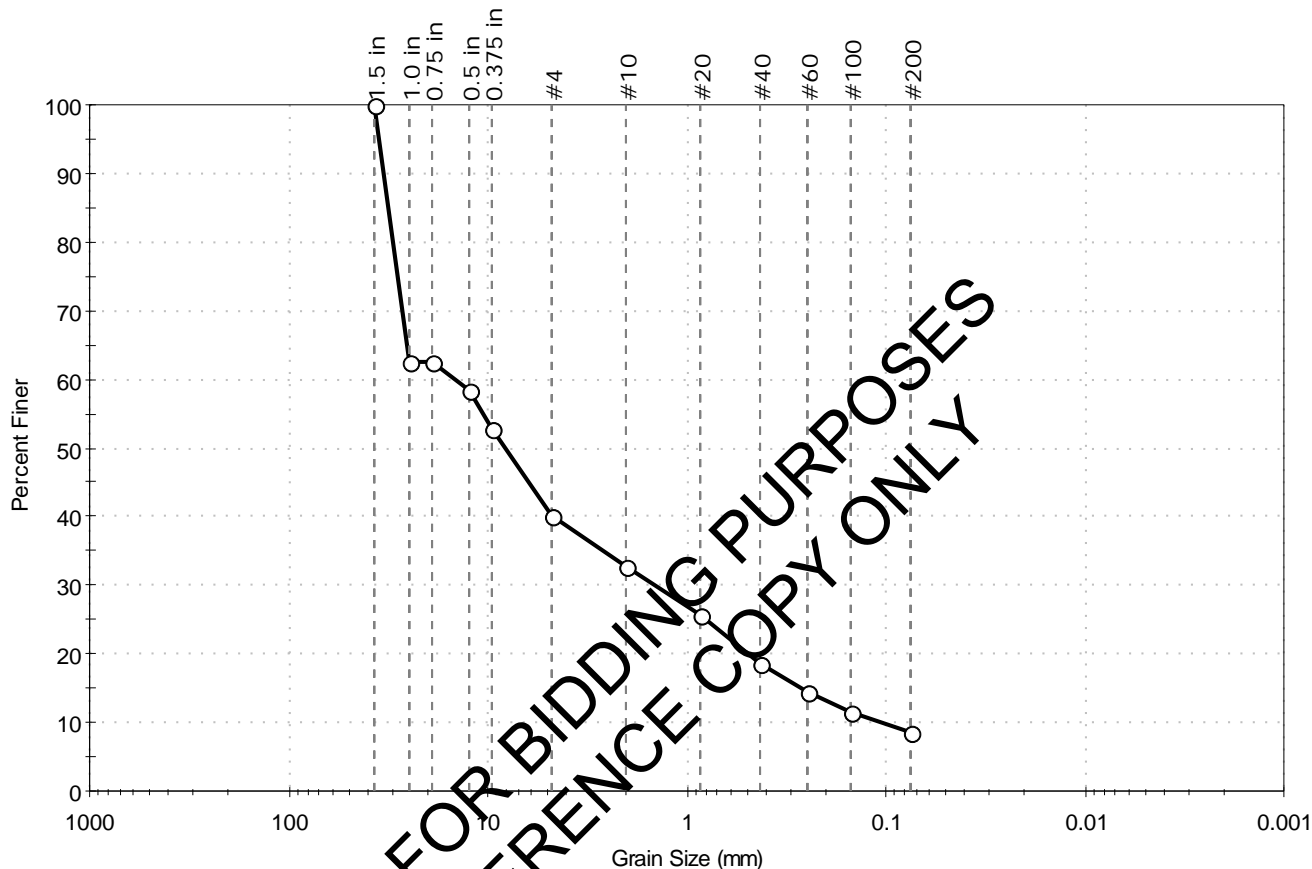
Prepared by:	Danielle Hare	Reviewed by:	W. Song
--------------	---------------	--------------	---------

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

**ATTACHMENT 3
LABORATORY TESTING RESULTS**

Client: AECOM	Project No: GTX-304913	
Project: GNHWPCA Relief Sewer		
Location: New Haven, CT		
Boring ID: B-012-01	Sample Type: bag	Tested By: GA
Sample ID: SS-2	Test Date: 06/29/16	Checked By: emm
Depth: 10-12 ft	Test Id: 381765	
Test Comment: ---		
Visual Description: Moist, dark reddish brown gravel with silt and sand		
Sample Comment: ---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	69.8	31.8	8.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1.0 in	25.00	63		
0.75 in	19.00	63		
0.5 in	12.50	58		
0.375 in	9.50	53		
#4	4.75	40		
#10	2.00	33		
#20	0.85	26		
#40	0.42	19		
#60	0.25	14		
#100	0.15	12		
#200	0.075	8.4		

Coefficients

$D_{85} = 31.8675 \text{ mm}$ $D_{30} = 1.4199 \text{ mm}$
 $D_{60} = 14.6187 \text{ mm}$ $D_{15} = 0.2707 \text{ mm}$
 $D_{50} = 8.0970 \text{ mm}$ $D_{10} = 0.1060 \text{ mm}$
 $C_u = 137.912$ $C_c = 1.301$

Classification

ASTM N/A

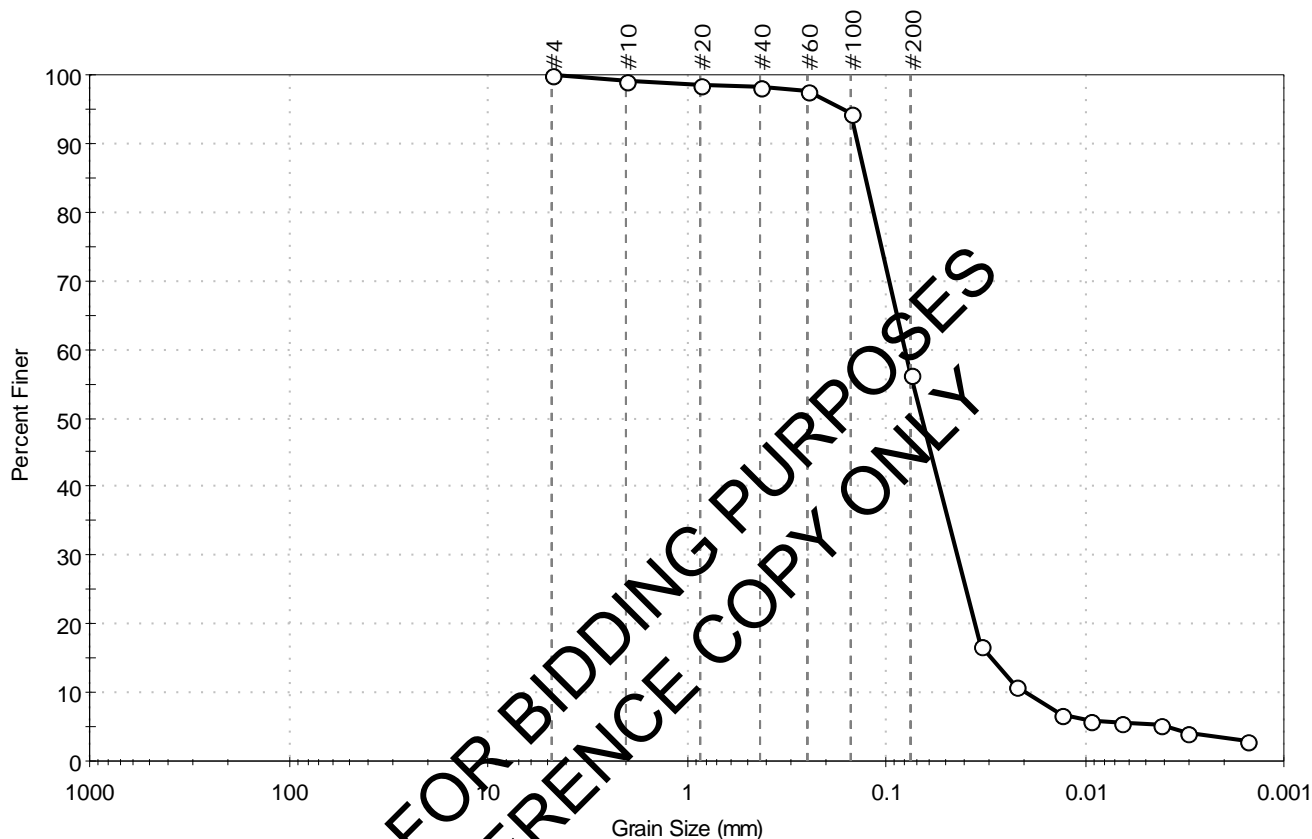
AASHTO Stone Fragments, Gravel and Sand (A-1-a (1))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD

Client:	AECOM	Project No:	GTX-304913
Project:	GNHWPCA Relief Sewer		
Location:	New Haven, CT		
Boring ID:	B-012-03	Sample Type:	bag
Sample ID:	SS-3	Test Date:	06/29/16
Depth :	15-17 ft	Test Id:	381766
Test Comment:	---	Tested By:	GA
Visual Description:	Moist, dark reddish brown sandy silt	Checked By:	emm
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0	43.7	56.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	98		
#60	0.25	98		
#100	0.15	94		
#200	0.075	56		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0336	17		
---	0.0220	11		
---	0.0133	7		
---	0.0094	6		
---	0.0067	6		
---	0.0042	5		
---	0.0031	4		
---	0.0015	3		

Coefficients

D ₈₅ = 0.1266 mm	D ₃₀ = 0.0440 mm
D ₆₀ = 0.0803 mm	D ₁₅ = 0.0298 mm
D ₅₀ = 0.0660 mm	D ₁₀ = 0.0198 mm
C _u = 4.056	C _c = 1.218

Classification

ASTM Sandy Silt (ML)

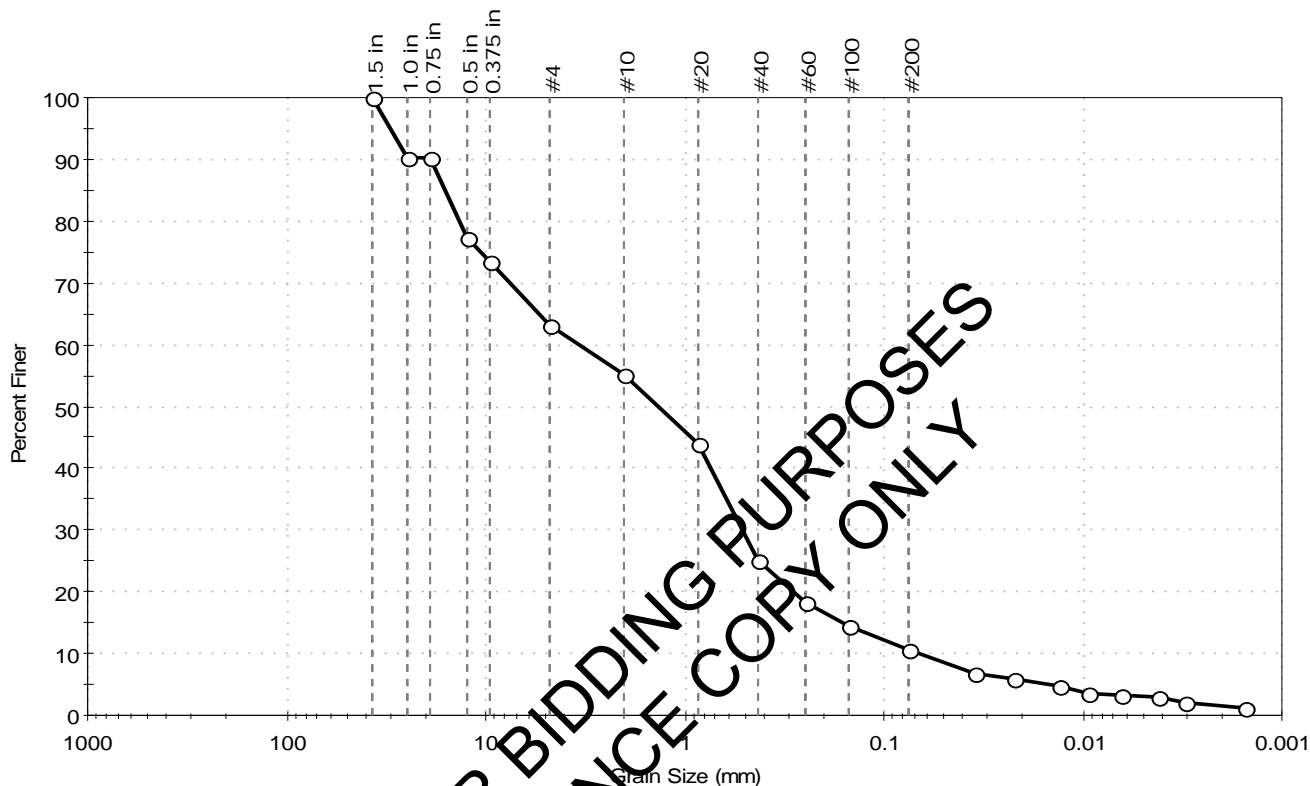
AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---
 Sand/Gravel Hardness : ---
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Specific Gravity : 2.65
 Separation of Sample: #200 Sieve

Client: AECOM	Project: GNHWPCA Relief Sewer	Location: New Haven, CT	Project No: GTX-304913
Boring ID: B-012-04	Sample Type: bag	Tested By: GA	
Sample ID: SS-3	Test Date: 06/29/16	Checked By: emm	
Depth: 15-17 ft	Test Id: 381767		
Test Comment: ---			
Visual Description: Moist, dark reddish brown sand with silt and gravel			
Sample Comment: ---			

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	37.0	52.3	10.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1.0 in	25.00	90		
0.75 in	19.00	90		
0.5 in	12.50	77		
0.375 in	9.50	74		
#4	4.75	63		
#10	2.00	55		
#20	0.85	44		
#40	0.42	25		
#60	0.25	18		
#100	0.15	14		
#200	0.075	11		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0351	7		
---	0.0225	6		
---	0.0131	5		
---	0.0093	3		
---	0.0065	3		
---	0.0042	3		
---	0.0031	2		
---	0.0015	1		

Coefficients

$D_{85} = 16.0574 \text{ mm}$ $D_{30} = 0.5117 \text{ mm}$
 $D_{60} = 3.4029 \text{ mm}$ $D_{15} = 0.1629 \text{ mm}$
 $D_{50} = 1.3560 \text{ mm}$ $D_{10} = 0.0647 \text{ mm}$
 $C_u = 52.595$ $C_c = 1.189$

Classification

ASTM N/A

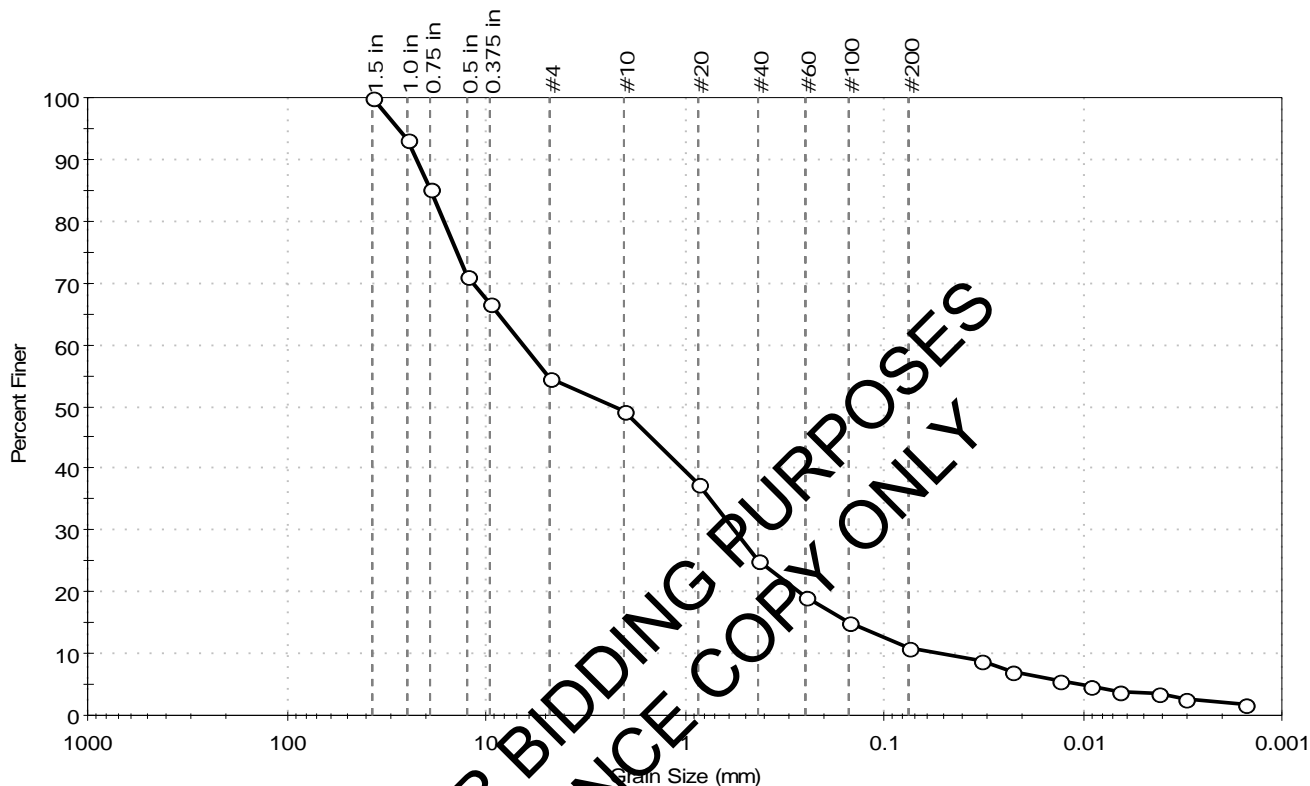
AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Specific Gravity : 2.65
 Separation of Sample: #200 Sieve

Client: AECOM	Project: GNHWPCA Relief Sewer	Location: New Haven, CT	Project No: GTX-304913
Boring ID: B-012-05	Sample Type: bag	Tested By: GA	
Sample ID: SS-1	Test Date: 06/29/16	Checked By: emm	
Depth: 5-7 ft	Test Id: 381768		
Test Comment: ---			
Visual Description: Moist, dark reddish brown gravel with silt and sand			
Sample Comment: ---			

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	45.3	43.7	11.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1.0 in	25.00	93		
0.75 in	19.00	85		
0.5 in	12.50	71		
0.375 in	9.50	67		
#4	4.75	55		
#10	2.00	49		
#20	0.85	38		
#40	0.42	25		
#60	0.25	19		
#100	0.15	15		
#200	0.075	11		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0325	9		
---	0.0227	7		
---	0.0130	5		
---	0.0093	5		
---	0.0066	4		
---	0.0042	3		
---	0.0031	3		
---	0.0015	2		

Coefficients

$D_{85} = 18.8685 \text{ mm}$ $D_{30} = 0.5585 \text{ mm}$
 $D_{60} = 6.4828 \text{ mm}$ $D_{15} = 0.1503 \text{ mm}$
 $D_{50} = 2.2793 \text{ mm}$ $D_{10} = 0.0509 \text{ mm}$
 $C_u = 127.363$ $C_c = 0.945$

Classification

ASTM N/A

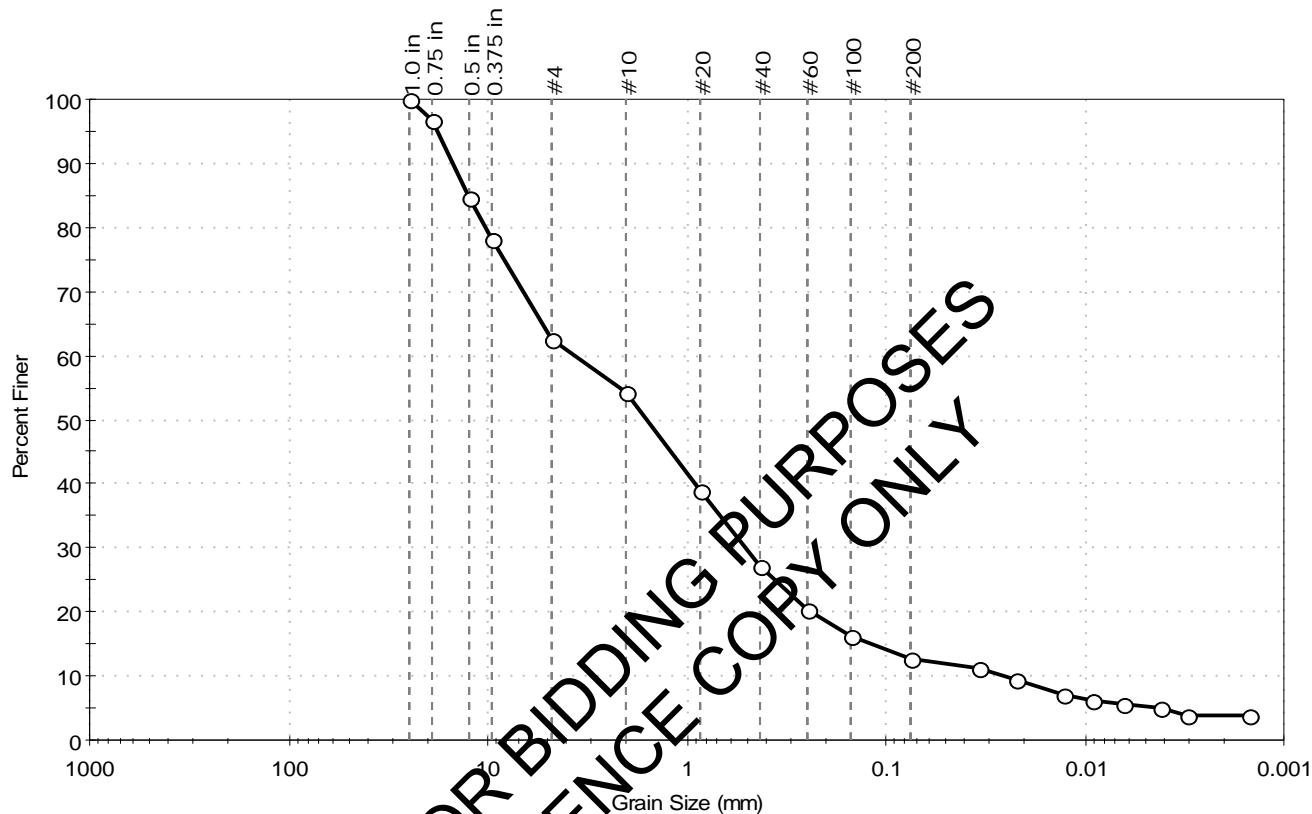
AASHTO Stone Fragments, Gravel and Sand (A-1-a (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Specific Gravity : 2.65
 Separation of Sample: #200 Sieve

Client:	AECOM		
Project:	GNHWPCA Relief Sewer		
Location:	New Haven, CT	Project No:	GTX-304913
Boring ID:	B-020-01	Sample Type:	bag
Sample ID:	SS-3	Test Date:	06/29/16
Depth :	15-16 ft	Test Id:	381769
Test Comment:	---		
Visual Description:	Moist, dark reddish brown silty sand with gravel		
Sample Comment:	---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	37.3	50.1	12.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.0 in	25.00	100		
0.75 in	19.00	97		
0.5 in	12.50	85		
0.375 in	9.50	78		
#4	4.75	63		
#10	2.00	54		
#20	0.85	39		
#40	0.42	27		
#60	0.25	20		
#100	0.15	16		
#200	0.075	13		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0344	11		
---	0.0223	10		
---	0.0129	7		
---	0.0092	6		
---	0.0065	6		
---	0.0042	5		
---	0.0031	4		
---	0.0015	4		

Coefficients

$D_{85} = 12.6113 \text{ mm}$ $D_{30} = 0.5023 \text{ mm}$
 $D_{60} = 3.6149 \text{ mm}$ $D_{15} = 0.1204 \text{ mm}$
 $D_{50} = 1.5791 \text{ mm}$ $D_{10} = 0.0250 \text{ mm}$
 $C_u = 144.596$ $C_c = 2.792$

Classification

ASTM N/A

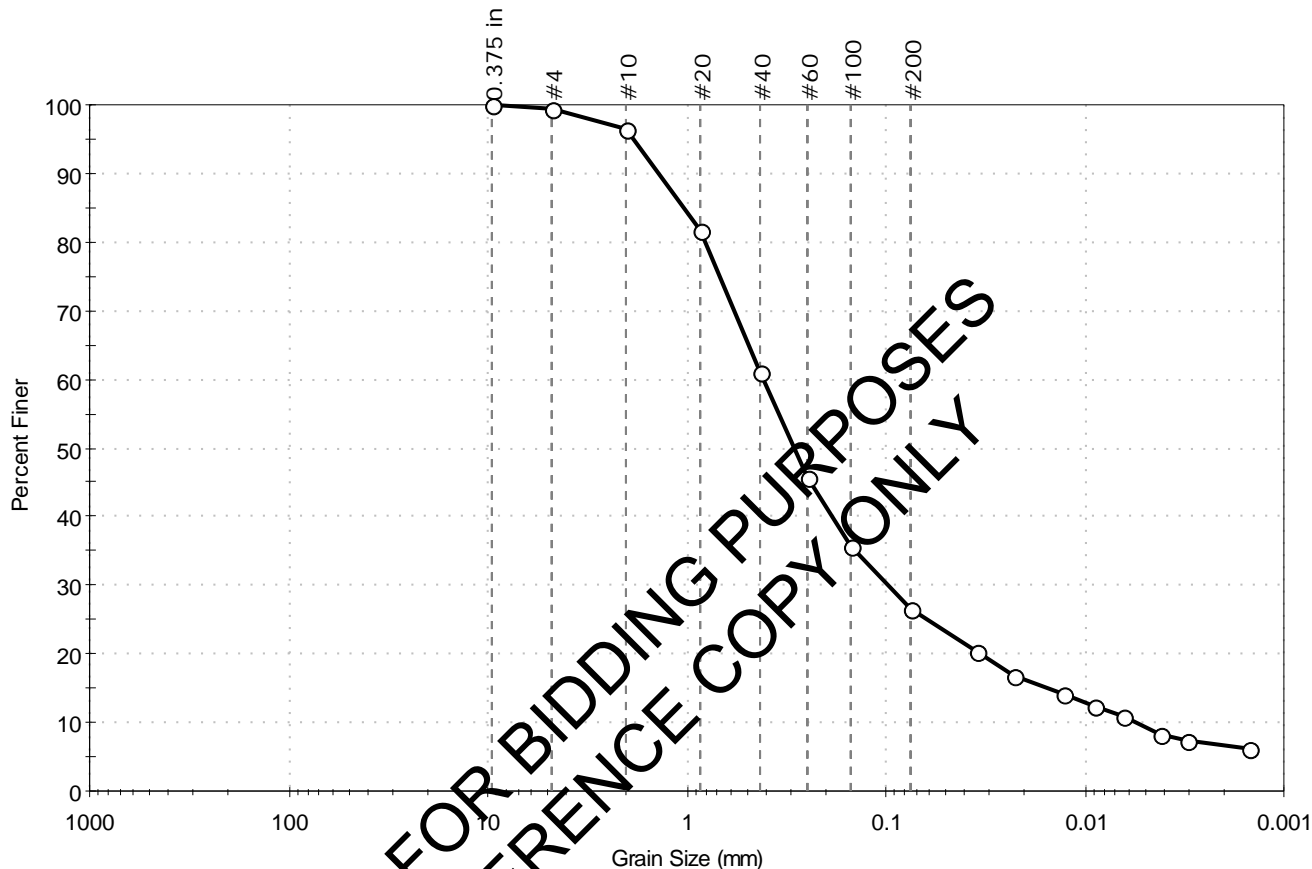
AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Specific Gravity : 2.65
 Separation of Sample: #200 Sieve

Client: AECOM	Project No: GTX-304913	
Project: GNHWPCA Relief Sewer		
Location: New Haven, CT		
Boring ID: B-020-02	Sample Type: bag	Tested By: GA
Sample ID: SS-2	Test Date: 06/29/16	Checked By: emm
Depth: 10-12 ft	Test Id: 381770	
Test Comment: ---		
Visual Description: Moist, dark reddish brown silty sand		
Sample Comment: ---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	72.9	26.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	97		
#20	0.85	82		
#40	0.42	61		
#60	0.25	46		
#100	0.15	36		
#200	0.075	27		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0348	20		
---	0.0226	17		
---	0.0128	14		
---	0.0090	12		
---	0.0064	11		
---	0.0041	8		
---	0.0030	7		
---	0.0015	6		

Coefficients

$D_{85} = 1.0259 \text{ mm}$ $D_{30} = 0.0977 \text{ mm}$
 $D_{60} = 0.4096 \text{ mm}$ $D_{15} = 0.0155 \text{ mm}$
 $D_{50} = 0.2891 \text{ mm}$ $D_{10} = 0.0056 \text{ mm}$
 $C_u = 73.143$ $C_c = 4.161$

Classification

ASTM N/A

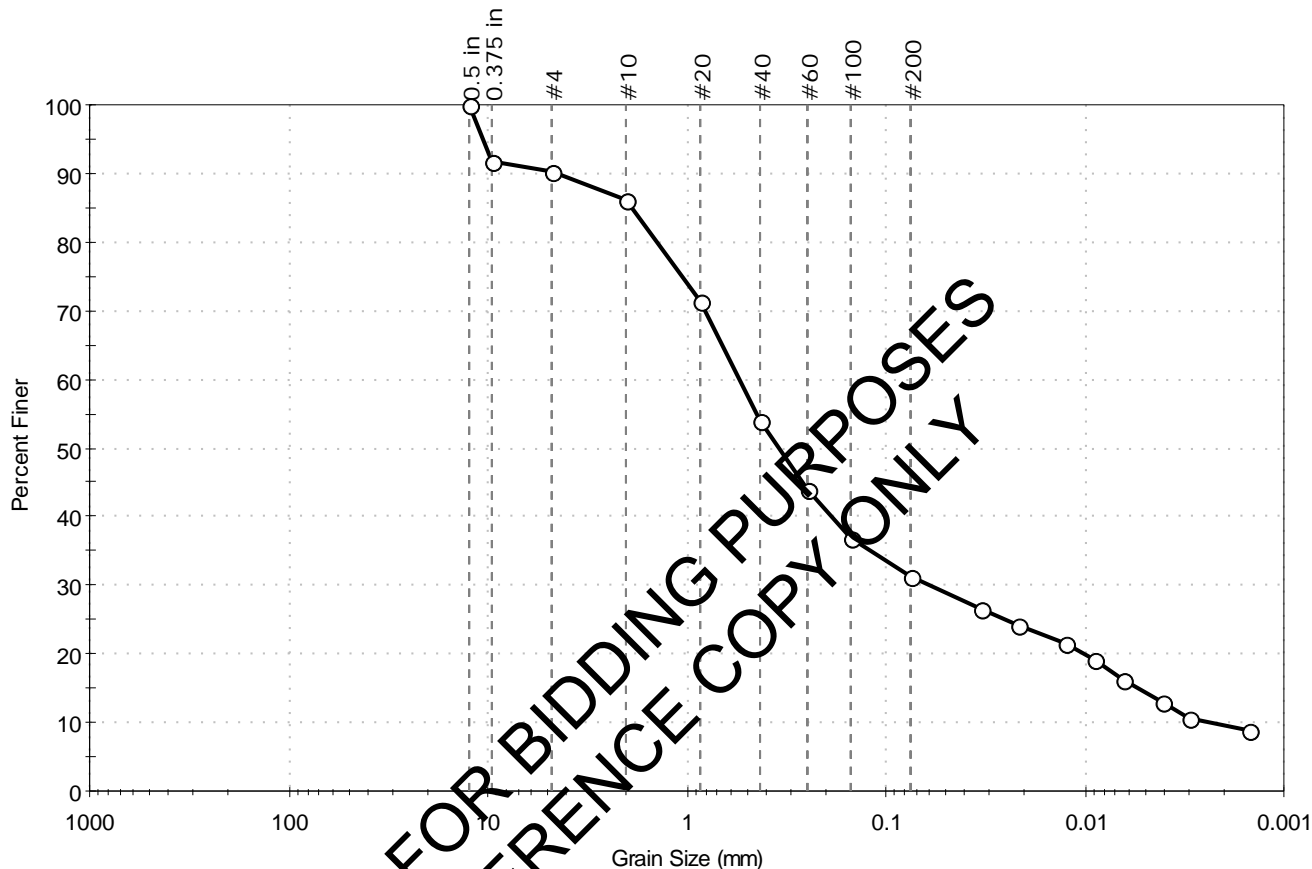
AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---
 Sand/Gravel Hardness : ---
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Specific Gravity : 2.65
 Separation of Sample: #200 Sieve

Client: AECOM	Project No: GTX-304913	
Project: GNHWPCA Relief Sewer		
Location: New Haven, CT		
Boring ID: B-020-03	Sample Type: bag	Tested By: GA
Sample ID: SS-1	Test Date: 06/29/16	Checked By: emm
Depth: 5-7 ft	Test Id: 381771	
Test Comment: ---		
Visual Description: Moist, dark reddish brown silty sand		
Sample Comment: ---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	29.0	59.0	31.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	92		
#4	4.75	90		
#10	2.00	86		
#20	0.85	71		
#40	0.42	54		
#60	0.25	44		
#100	0.15	37		
#200	0.075	31		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0331	26		
---	0.0217	24		
---	0.0126	22		
---	0.0089	19		
---	0.0064	16		
---	0.0041	13		
---	0.0030	11		
---	0.0015	9		

Coefficients

$D_{85} = 1.8869 \text{ mm}$ $D_{30} = 0.0604 \text{ mm}$
 $D_{60} = 0.5409 \text{ mm}$ $D_{15} = 0.0054 \text{ mm}$
 $D_{50} = 0.3447 \text{ mm}$ $D_{10} = 0.0023 \text{ mm}$
 $C_u = 235.174$ $C_c = 2.932$

Classification

ASTM N/A

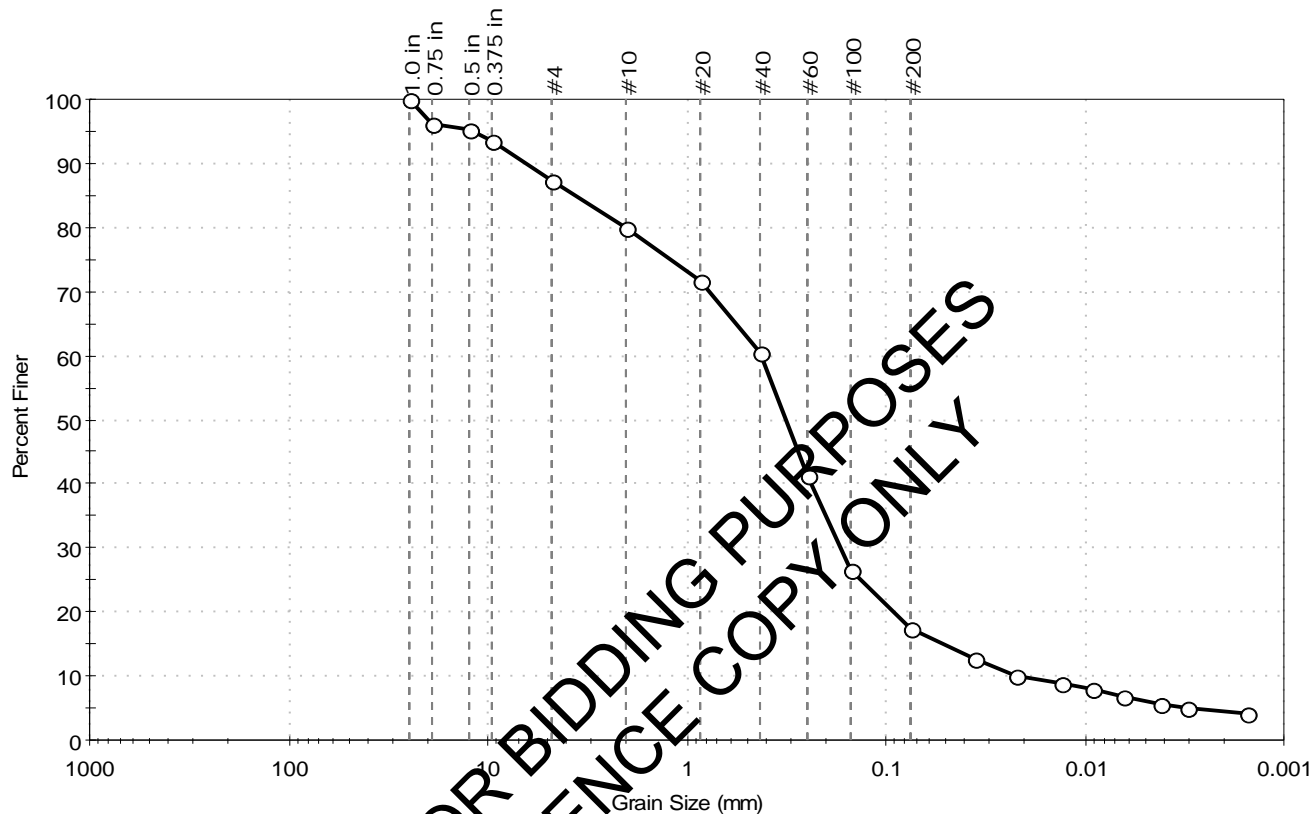
AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Specific Gravity : 2.65
 Separation of Sample: #200 Sieve

Client: AECOM	Project No: GTX-304913	
Project: GNHWPCA Relief Sewer		
Location: New Haven, CT		
Boring ID: B-020-06	Sample Type: bag	Tested By: GA
Sample ID: SS-1	Test Date: 06/29/16	Checked By: emm
Depth: 5-7 ft	Test Id: 381772	
Test Comment: ---		
Visual Description: Moist, dark reddish brown silty sand		
Sample Comment: ---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	12.7	69.8	17.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.0 in	25.00	100		
0.75 in	19.00	96		
0.5 in	12.50	95		
0.375 in	9.50	93		
#4	4.75	87		
#10	2.00	80		
#20	0.85	72		
#40	0.42	60		
#60	0.25	41		
#100	0.15	27		
#200	0.075	17		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0355	13		
---	0.0221	10		
---	0.0130	9		
---	0.0093	8		
---	0.0065	7		
---	0.0042	6		
---	0.0031	5		
---	0.0015	4		

Coefficients

$D_{85} = 3.6536 \text{ mm}$ $D_{30} = 0.1687 \text{ mm}$
 $D_{60} = 0.4207 \text{ mm}$ $D_{15} = 0.0507 \text{ mm}$
 $D_{50} = 0.3191 \text{ mm}$ $D_{10} = 0.0213 \text{ mm}$
 $C_u = 19.751$ $C_c = 3.176$

Classification

ASTM N/A

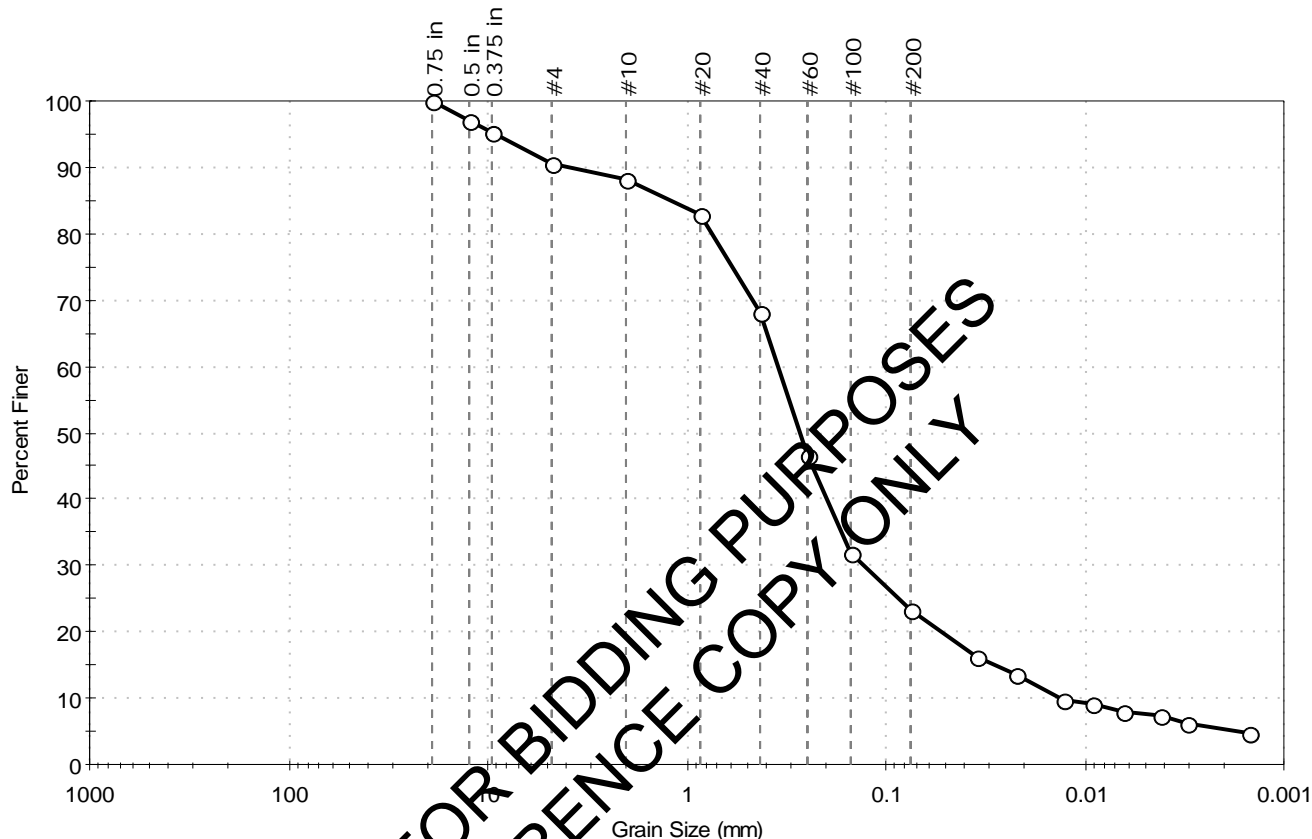
AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Specific Gravity : 2.65
 Separation of Sample: #200 Sieve

Client: AECOM	Project No: GTX-304913	
Project: GNHWPCA Relief Sewer		
Location: New Haven, CT		
Boring ID: B-020-07	Sample Type: bag	Tested By: GA
Sample ID: ---	Test Date: 06/29/16	Checked By: emm
Depth: 5-7 ft	Test Id: 382372	
Test Comment: ---		
Visual Description: Moist, dark reddish brown silty sand		
Sample Comment: ---		

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	9.4	67.4	23.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	97		
0.375 in	9.50	95		
#4	4.75	91		
#10	2.00	88		
#20	0.85	83		
#40	0.42	68		
#60	0.25	47		
#100	0.15	32		
#200	0.075	23		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0353	16		
---	0.0222	14		
---	0.0130	10		
---	0.0092	9		
---	0.0065	8		
---	0.0041	7		
---	0.0030	6		
---	0.0015	5		

Coefficients

$D_{85} = 1.1910 \text{ mm}$ $D_{30} = 0.1299 \text{ mm}$
 $D_{60} = 0.3473 \text{ mm}$ $D_{15} = 0.0280 \text{ mm}$
 $D_{50} = 0.2716 \text{ mm}$ $D_{10} = 0.0134 \text{ mm}$
 $C_u = 25.918$ $C_c = 3.626$

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD
 Dispersion Device : Apparatus A - Mech Mixer
 Dispersion Period : 1 minute
 Specific Gravity : 2.65
 Separation of Sample: #200 Sieve



Client:	AECOM				
Project:	GNHWPCA Relief Sewer				
Location:	New Haven, CT		Project No:	GTX-304913	
Boring ID:	B-012-03	Sample Type:	bag	Tested By:	GA
Sample ID:	SS-3	Test Date:	06/28/16	Checked By:	emm
Depth :	15-17 ft	Test Id:	381773		
Test Comment:	---				
Visual Description:	Moist, dark reddish brown sandy silt				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	SS-3	B-012-03	15-17 ft	19	n/a	n/a	n/a	n/a	Sandy Silt (ML)

2% Retained on #40 Sieve

Dry Strength: NONE

Dilatancy: RAPID

Toughness: n/a

The sample was determined to be Non-Plastic

APPENDIX B -

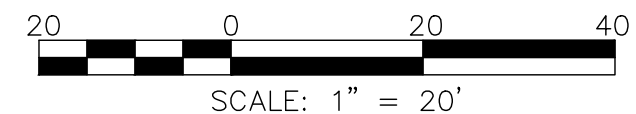
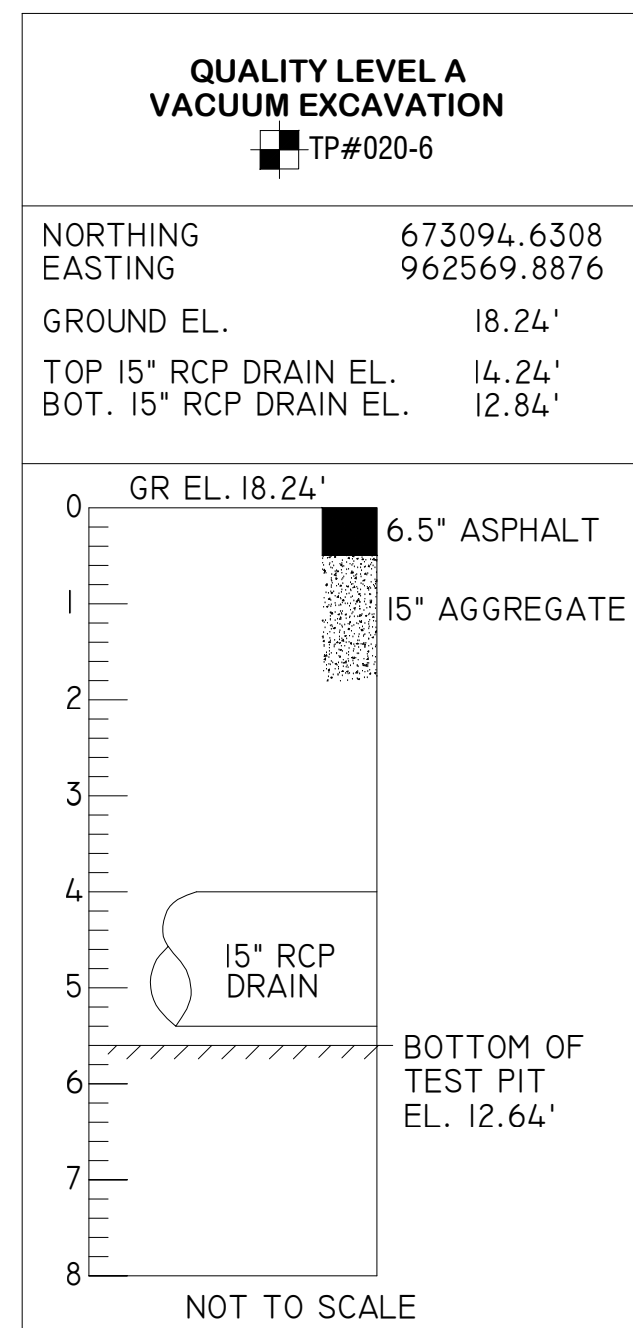
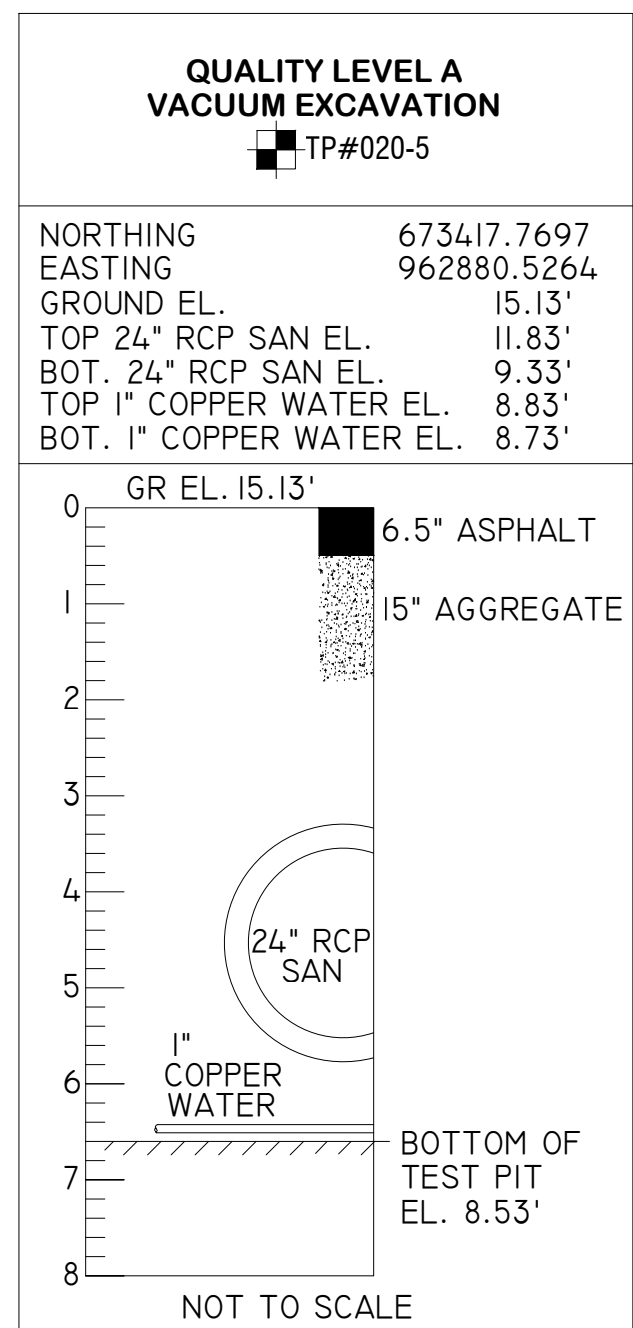
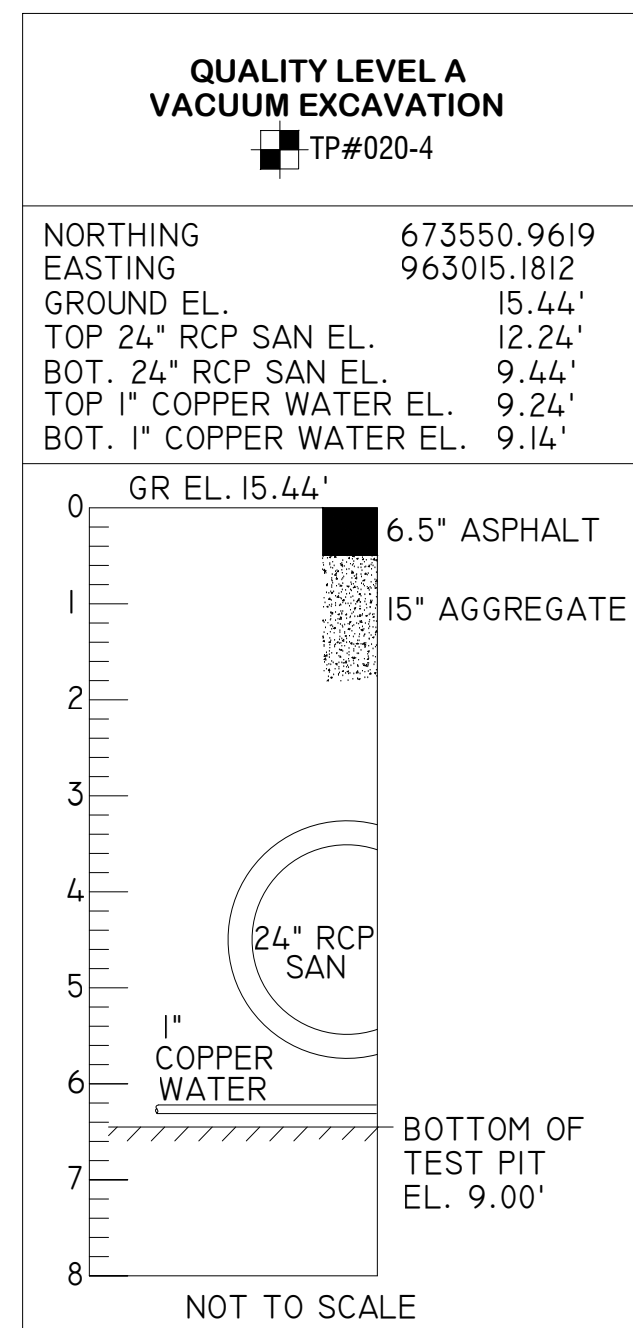
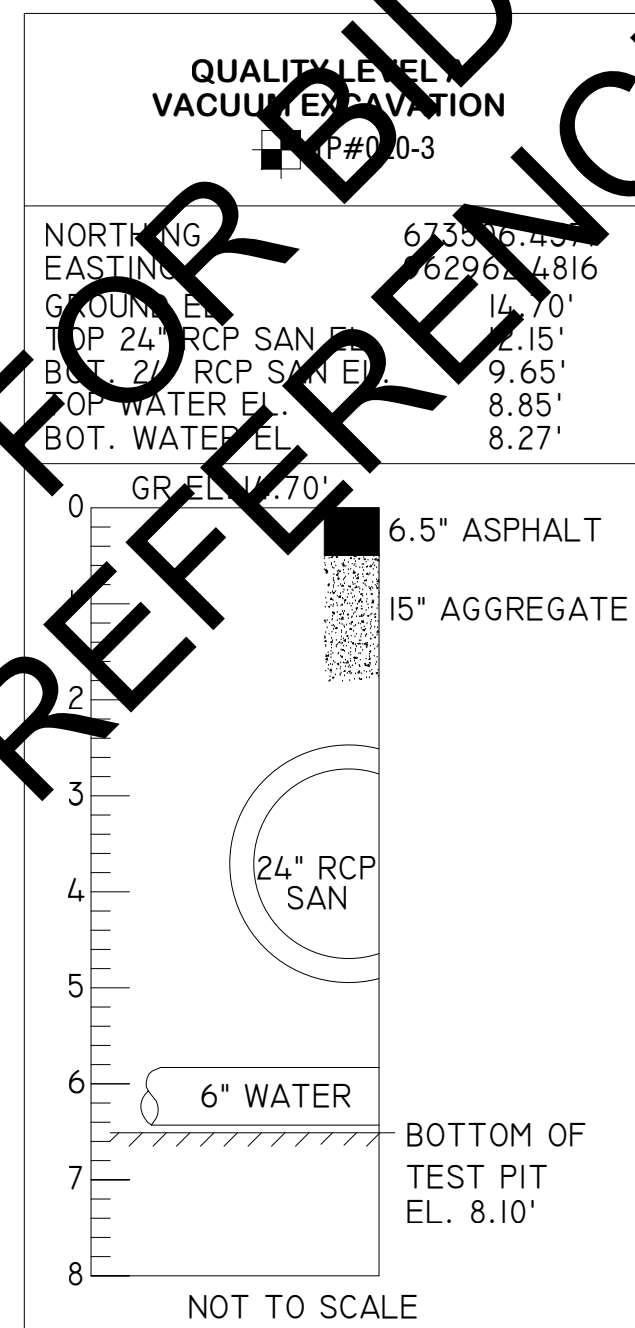
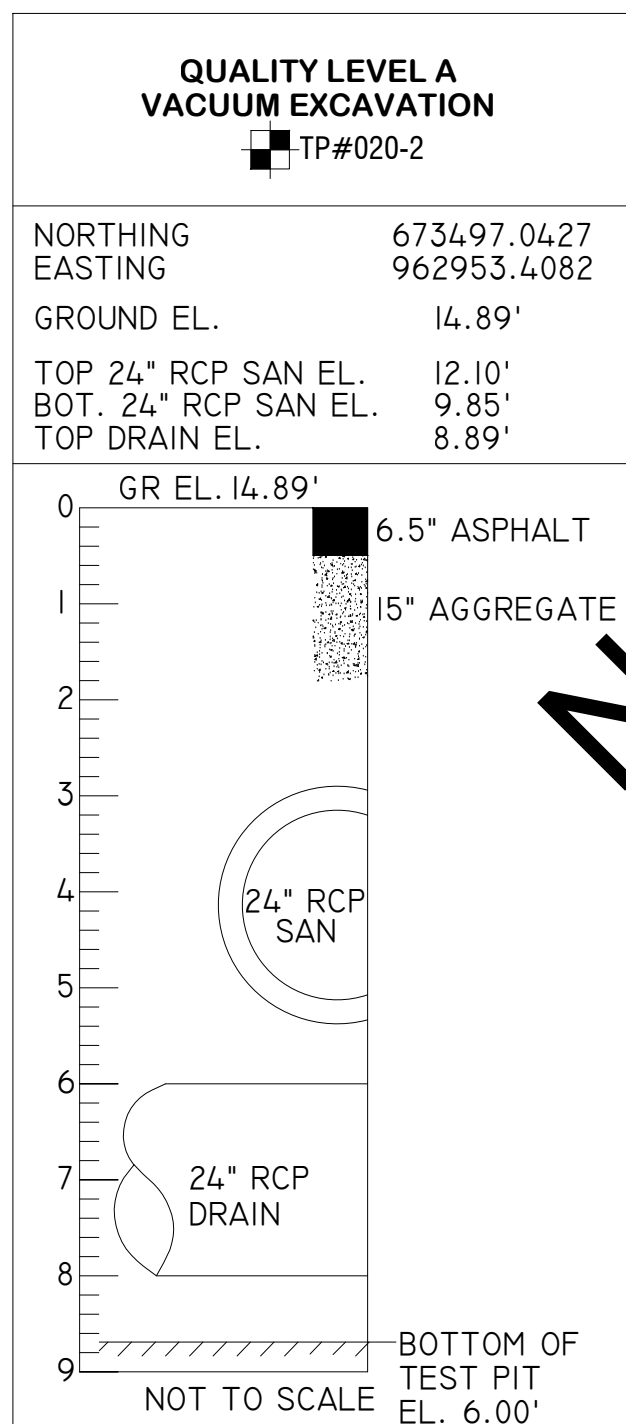
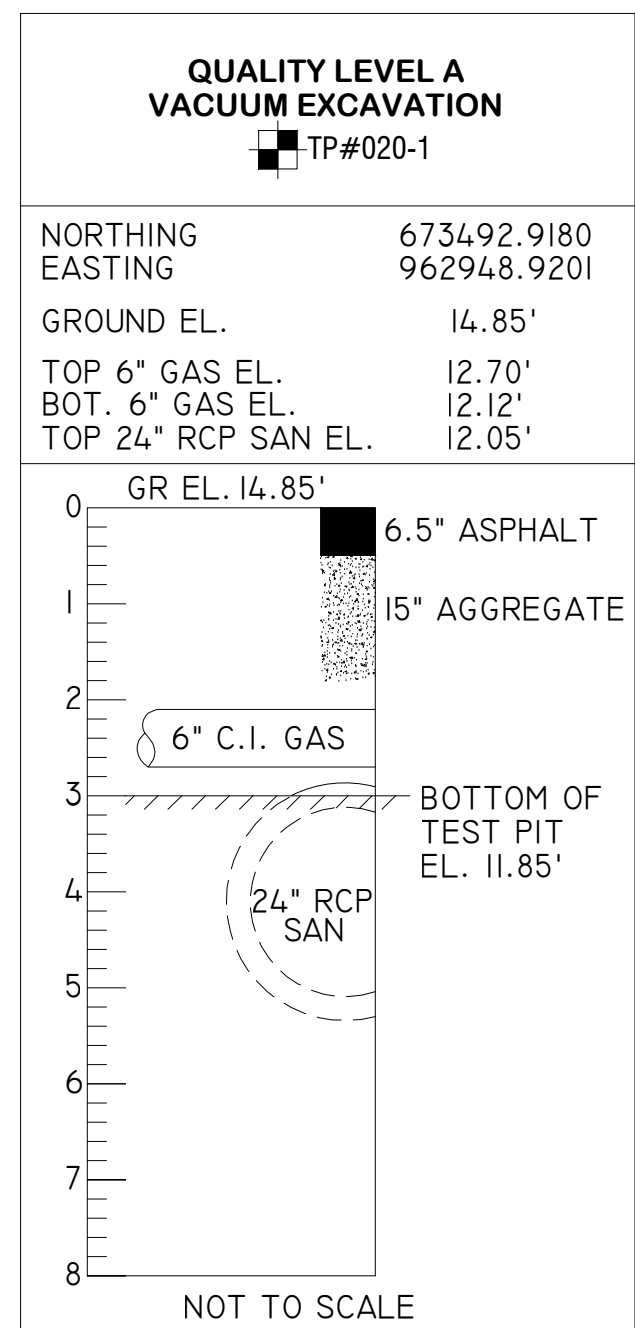
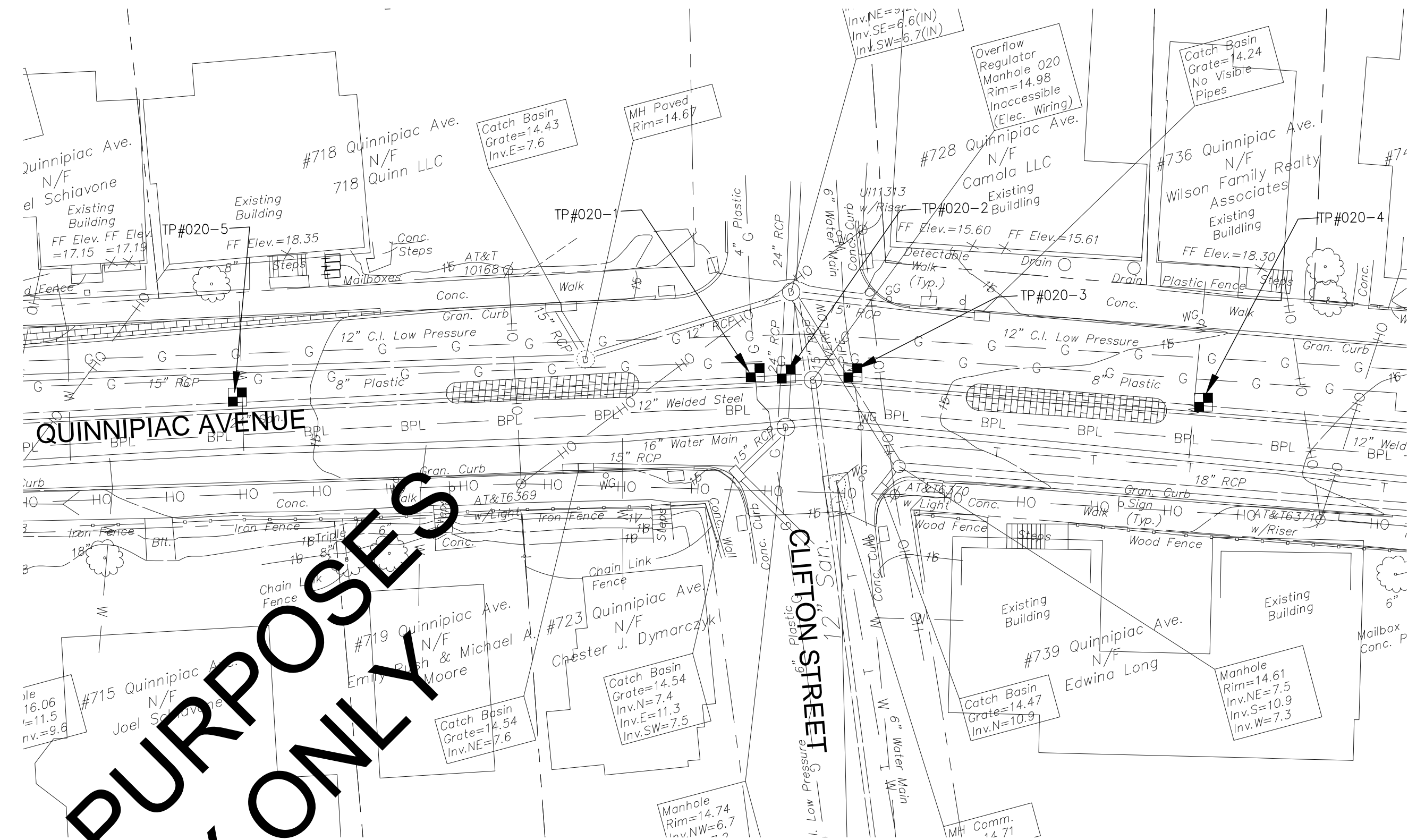
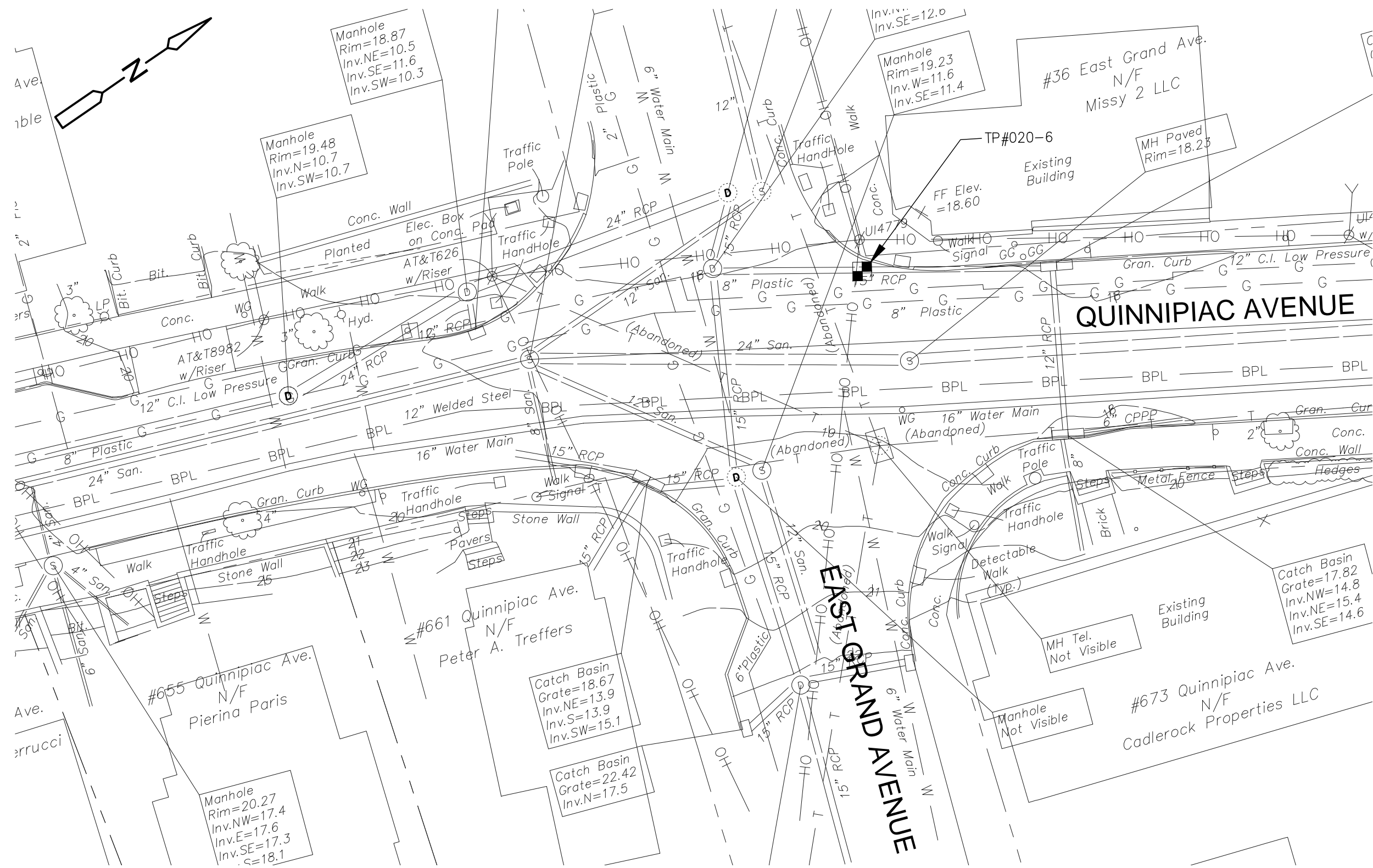
**SCHEDULE OF CONSTRUCTION -
NOT USED**

**NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY**

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

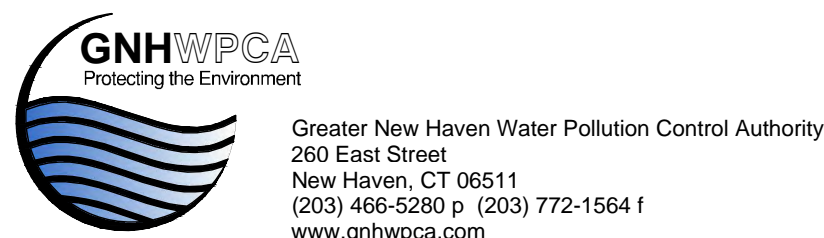
APPENDIX C -

TEST-PITS



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: S. GANESH
DRAWN BY: M. THIBODEAU
SHEET CHK'D BY: R. BERLANDY
CROSS CHK'D BY: S. GANESH
APPROVED BY: J. SULLIVAN
DATE: OCTOBER 2016



90% SUBMITTAL
NOT FOR
CONSTRUCTION



500 ENTERPRISE DRIVE, SUITE 1A
ROCKY HILL, CT 06067
PHONE (860) 263-5800

CONTRACT NO. CWF-2016-02
REGULATORS 020 RELIEF SEWER

020 RELIEF SEWER TEST PITS

CIVIL

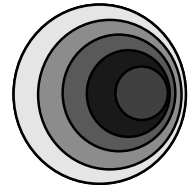
PROJECT NO. 60494415
FILE NAME: C-100.DWG
SHEET NO.
SCALE: AS NOTED

APPENDIX D –

BUCKEYE PIPELINE RIGHT OF WAY USE RESTRICTIONS

**NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY**

BUCKEYE PARTNERS, L.P. AND AFFILIATES
Five TEK Park, 9999 Hamilton Boulevard
Breinigsville, PA 18031

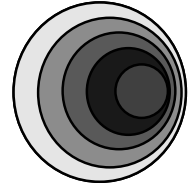


Right-of-Way Use Restrictions Specification
Revision 4.1

Table of Contents

<u>SECTION</u>	<u>PAGE NO.</u>
Purpose and Scope-----	2
1.0 General Guidelines-----	2
2.0 Excavation and Construction Restrictions-----	3
3.0 Specific Guidelines-----	5
3.1 Cover, Grading, and Drainage -----	5
3.1.1 Cover and Grading-----	5
3.1.2 Drainage-----	5
3.2 Aboveground and Underground Structures -----	5
3.2.1 General Requirements-----	5
3.2.2 Gardening and Landscaping -----	5
3.2.3 Fences and Walls -----	6
3.3 Roads, Driveways, Sidewalks, and Parking Areas -----	6
3.3.1 General Requirements-----	6
3.4 Foreign Utility Crossings-----	6
3.4.1 General Requirements-----	6
3.4.2 Metallic Utilities -----	7
3.4.3 Non-Metallic Utilities-----	7
3.5 Electrical, Fiber-Optic, and Communications Cables-----	7
3.5.1 General Requirements-----	7
3.5.2 Buried Cables-----	7
3.5.3 Aboveground Cables-----	8
3.6 Temporary Access Roads and Heavy/Construction Vehicle Crossings-----	8
3.7 Railroad Crossings-----	8
3.8 Farming and Field Use-----	8
3.9 Construction-Induced Vibrations-----	9
3.10 Blasting Operations-----	9
3.11 Seismic Vibrating Operations-----	10
3.12 Wind Turbines-----	11
4.0 Deviations and Exceptions-----	12
5.0 Additional Information and Buckeye Contacts-----	12
<u>ATTACHMENTS</u>	
1 Buckeye Facility Locations and Phone Numbers-----	13
2 Right of Way and Engineering Contacts-----	14
3 State One Call Systems -----	15
4 Application for Design Plan Submission and Encroachment Review -----	16
5 Reinforced-Concrete Slab Detail -----	19
6 Earthen Ramp Detail -----	20
7 Foreign Utility Trench Crossing Detail-----	21
8 Blasting Plan Submission Form -----	22
9 Excavation Safety Checklist -----	23

Buckeye Partners, L.P. and Affiliates
Right-of-Way Use Restrictions Specification
Revision 4.1



Purpose and Scope

This Right-of-Way Use Restrictions Specification (hereinafter called "Specification") has been developed by Buckeye Partners, L.P. and Affiliates (hereinafter called "Buckeye") and is intended for landowners, utility owners, general contractors and their sub-contractors, pipeline/utility contractors, real estate developers, brokers and agents, lending officers and title underwriters, engineers, architects, surveyors, and local / governmental elected staffs (hereinafter called "Crossing Party") as a guideline for the design and construction of proposed land development.

Buckeye appreciates this opportunity to work with you in the planning stages of your development (or construction activity), and we look forward to working with you proactively. Buckeye's primary concern when activities are taking place near our pipeline is public safety and environmental protection. The intent of this Specification is to provide a clear and consistent set of requirements that will: (1) reduce the risk of damage to our pipeline and related facilities; (2) ensure unencumbered access to our right-of-way and pipeline facilities and the availability of adequate workspace for routine maintenance, future inspection, and/or repair work on our pipeline; and (3) enable the effective corrosion protection of our pipeline.

All such activities and projects that are performed near Buckeye's pipeline facilities are subject to formal review by Buckeye prior to issuance of final written approval. Depending on the scope of the project and its impact on Buckeye's pipeline facilities, additional engineering requirements and protective measures may apply. The following requirements are not only the policy of Buckeye, but comply with regulations set forth by the United States Department of Transportation, Safety Regulations, 49 CFR, Parts 192 and 195.

We want to be a good neighbor, but to do so requires us to act responsibly in protecting our right-of-way and preventing damage to the pipeline system. While we want to make every effort to accommodate your desired use of your property, our responsibility for public safety is paramount. Through proper planning and communications, we can ensure the safety and integrity of our pipeline system and the welfare of our neighbors.

The transmittal of this Specification does not constitute Buckeye's approval or permission for the Crossing Party to begin construction or work within or across the pipeline right-of-way. Work may not commence until written authorization approving such work has been issued by Buckeye.

1.0 General Guidelines

- 1.1 The safety of the pipeline must be considered at all times. No attempt to probe for or engage in any construction activities which might damage the pipeline is permitted.
- 1.2 Before any preliminary field work or construction begins in the vicinity of Buckeye's pipeline, a determination of the exact location and elevation of the pipeline must be made. To coordinate this procedure, please contact our local Field Operations Manager at the Buckeye facility nearest to your proposed project (see [Attachment 1](#) for a listing of Buckeye's facilities and telephone numbers).

- 1.3 All proposed drawings/plans must be submitted to Buckeye's Right of Way Department for review to determine to what extent, if any, the pipeline or right-of-way will be affected by the proposed construction and/or development. These drawings/plans must be prepared in strict compliance to Attachment 4, "Requirements for Submission of Design Plans".
- 1.4 When any construction activity is conducted in or around our pipeline right-of-way, Buckeye's On-Site Inspector must be present at all times. **NO WORK SHALL TAKE PLACE WITHOUT A BUCKEYE ON-SITE INSPECTOR PRESENT.** For this free-of-charge service, contact our local Field Operations Manager at the Buckeye facility nearest to your proposed project.
- 1.5 The Crossing Party shall contact Buckeye for re-marking of a pipeline if the existing markers are inadequate for any reason, including disturbance due to construction activities.

Note: Federal law prohibits the removal of pipeline markers.

- 1.6 The Crossing Party shall not burn trash, brush, or other items or substances within 50 feet of the pipeline.
- 1.7 The Crossing Party shall not store any equipment or materials on the right-of-way.
- 1.8 During routine or emergency maintenance on the pipeline, the cost to restore approved surface improvements (e.g., pavement, landscaping, sidewalks, etc.) shall be the responsibility of the Crossing Party.

2.0 Excavation and Construction Restrictions

- 2.1 Excavation operations shall be performed in accordance with appropriate State "One-Call" utility locating system requirements. As a matter of State law, anyone undertaking excavation work is required to call three (3) working days before excavating in MA, ME, MI, MO, NJ, PA, RI, SC, TN, and WI; two (2) working days in all other states (see Attachment 3 for State "One-Call" numbers).



Know what's below.
Call before you dig.

- 2.2 The Crossing Party will conduct "white-lining" of any proposed excavation areas. Buckeye will erect temporary pipeline markers/flags (yellow) identifying the location of the pipeline within the work area, and will provide information on how to respond should the pipeline be damaged or a commodity release occur. All personnel operating equipment over or around the pipeline must be made aware of its location and what to do if they make contact with the pipeline.
- 2.3 When a Crossing Party excavates near Buckeye's pipeline, a Buckeye representative must locate the pipeline and determine the depth of cover before the Crossing Party begins excavation. The Buckeye representative and the excavator must review and complete an Excavation Safety Checklist (Attachment 9). The Crossing Party shall not perform any excavation, crossing, backfilling, or construction operations until Buckeye's On-Site Inspector has reviewed the proposed work on site and given approval for work to proceed. Buckeye's On-Site Inspector shall have full authority to stop the work if it is determined that the work is being performed in an unsafe manner.

- 2.4 No equipment shall work directly over the pipeline. The Crossing Party shall install temporary fencing along Buckeye's right-of-way boundaries so that equipment will not inadvertently pass over the pipeline at locations other than those established for crossing (see Section 3.6).
- 2.5 When excavating within the right-of-way, the Crossing Party's backhoe shall have a plate welded over the teeth of the backhoe bucket, and the side cutters must be removed prior to excavation. However, if within 24 inches of the outer edge of the pipe (this "tolerance zone" extends on all sides of the pipe), only hand excavation, air cutting, and vacuum excavation are permitted.
- 2.6 No excavations shall be made on land adjacent to the pipeline that will in any way impair, withdraw lateral support, cause subsidence, create the accumulation of water, or cause damage to the pipeline or right-of-way.
- 2.7 The Crossing Party shall ensure all excavation work complies with OSHA's excavation standards outlined in 29 CFR 1926 and correct any noncompliant excavation site before Buckeye's On-Site Inspector or the Crossing Party enters the site to perform work.
- 2.8 If conditions require, the Crossing Party shall be directed by Buckeye to install sand or cement bags or other suitable insulating materials to maintain proper vertical clearance from the pipeline.
- 2.9 At any location where the pipeline is exposed, the Crossing Party shall provide Buckeye the opportunity to inspect the pipeline condition, install cathodic protection test leads, and/or install underground warning mesh.
- 2.10 The maximum unsupported exposed length of pipe shall be 20 feet for 4-inch-diameter pipe, 25 feet for 6-inch- to 10-inch-diameter pipe and 35 feet for 12-inch- to 24-inch-diameter pipe. When required, the pipeline shall be supported with grout and sand bags or padded skids. At no time shall the pipeline be used as a brace to support equipment or sheeting/shoring materials.
- Note: The Crossing Party shall submit a support plan for Buckeye's review and approval.
- 2.11 No buried pipeline may be left exposed for any duration of time without concurrence of Buckeye's On-Site Inspector.
- 2.12 Backfill and compaction shall be performed to the satisfaction and in the presence of Buckeye's On-Site Inspector. Within 5 feet of the pipeline crossing location, the Crossing Party shall place at least 12 inches of sand with no sharp gravel, rock, hard clods, vegetation, or other debris on all sides of any pipeline, and remaining backfill shall be placed so as not to disturb this padding material or damage the pipeline (see Attachment 7 for Foreign Utility Crossing Detail). Backfill over the pipe shall be compacted by hand until 18 inches of cover is achieved. The disturbed ground shall be compacted to the same degree of compaction of surrounding areas. The Crossing Party shall restore the site to its original condition except for items that are part of the Buckeye approved change.

3.0 Specific Guidelines

3.1 Cover, Grading, and Drainage

3.1.1 **Cover and Grading:**

- a. The existing cover over the pipeline shall not be modified without Buckeye's written approval.
- b. The final grading shall net a minimum cover of 36 inches over the pipeline.
- c. In areas where buildings are proposed within 50 feet of the pipeline or due to other surface improvements and/or in areas determined by Buckeye, final grading shall net a minimum cover of 48 inches over the pipeline.
- d. The maximum allowable constructed cross-slope within the ROW shall be 5H:1V and shall never be greater than the existing cross-slope.
- e. The maximum allowable cover/soil shall not exceed six (6) feet without Buckeye's written approval.
- f. Use of vibratory equipment larger than walk-behind units is not permitted within 25 feet of the pipeline.

3.1.2 **Drainage:**

- a. Detention ponds, lakes, structures or any type of impoundment of water, temporary or permanent, are prohibited within the right-of-way.
- b. Culverts are not permitted within the right-of-way.
- c. Any modifications to an existing drainage pattern shall be designed such that the erosion of the pipeline cover is controlled.
- d. For streams, drainage channels, and ditches, a minimum of cover of 60 inches is required between the pipeline and the bottom of the drainage canal or ditch (see Section 3.3.1.f for road drainage ditches).

3.2 Aboveground and Underground Structures

3.2.1 **General Requirements:**

- a. Buildings or other structures, including, but without limitation, overhanging balconies, patios, decks, swimming pools, wells, walls, septic systems, propane tanks, transformer pads, or the storage of materials which creates an obstruction or prevents the inspection of the right-of-way by air or foot, shall not be erected within the right-of-way.
- b. The Crossing Party shall not develop or build retaining walls, drive piling or sheeting, or install an engineered structure that develops or controls overburden loads that will impact the pipeline (see Section 3.9).
- c. Deep foundations which include piers, caissons, drilled shafts, bored piles, and cast-in-situ piles located within 500 feet of the pipeline shall be installed/drilled using an auger.
- d. Occupied structures shall not be located within 50 feet of the pipeline unless a minimum cover of 48 inches is provided above the top of the pipeline.
- e. Any deviation for aboveground and underground structures will be reviewed by Buckeye on a **case-by-case basis**.

3.2.2 **Gardening and Landscaping:**

- a. Trees, shrubs and bushes are not permitted within the right-of-way. Trees planted outside of the right-of-way should be placed so branches and limbs will not overhang the pipeline right-of-way as the tree matures. Buckeye may trim/remove overhanging branches and limbs that encroach into the right-of-way.

- b. Flowerbeds, vegetable gardens and lawns, are permitted within the right-of-way. Buckeye is not responsible for replacing any plantings located within the right-of-way.

3.2.3 Fences and Walls:

- a. Privacy fences or fences that prevent access to the right-of-way are not permitted.
- b. All other fence installations within the right-of-way will be reviewed for approval by Buckeye on a **case-by-case basis**. Upon Buckeye's written approval, fences shall be constructed with a 14-foot gate or removable sections across the right-of-way.
- c. Fence posts shall not be installed within 5 feet of the pipeline and must be equidistant if crossing the pipeline.
- d. No fence shall cross the right-of-way at less than a 60-degree angle.
- e. Fences that run parallel to the pipeline shall be installed outside the right-of-way.
- f. Masonry, brick, or stone walls are not permitted on the right-of-way.

3.3 Roads, Driveways, Sidewalks, and Parking Areas

3.3.1 General Requirements:

- a. Roads, driveways, sidewalks, or parking areas shall not be constructed across the right-of-way without Buckeye's written approval. Upon Buckeye's approval, roads, driveways, and sidewalks shall cross perpendicular to the pipeline.
- b. The maximum allowable cover shall not exceed 54 (6) feet without Buckeye's written approval.
- c. Use of vibratory equipment larger than walk-behind units is not permitted within 25 feet of the pipeline.
- d. Roads or driveways shall not be installed longitudinally within the right-of-way.
- e. For roads and driveways, a minimum cover of 48 inches with a net cover of 36 inches of undisturbed soil is required above the pipeline.
- f. A minimum cover of 36 inches over the pipeline is required at road drainage ditches. Upon Buckeye's approval, this cover can be reduced to 24 inches if ditch is rock/rip-rap lined and 12 inches if ditch is concrete lined.
- g. For asphalt parking lots and sidewalks, a minimum cover of 36 inches with a net cover of 24 inches of undisturbed soil is required above the pipeline. Additional cover may be required by Buckeye based upon specific site conditions.

3.4 Foreign Utility Crossings

3.4.1 General Requirements:

- a. Utilities shall cross perpendicular to the pipeline.
- b. Utilities are required to cross beneath the pipeline with a minimum clearance of 24 inches. Exceptions to Buckeye's clearance requirements for underground service entrances to single family dwellings will be reviewed on a **case-by-case basis**.
- c. Sand or select fill shall be placed between the pipeline and utility (see Section 2.8).
- d. Utilities installed parallel to the pipeline shall be reviewed by Buckeye on a **case-by-case basis**. If approved, the utility shall be no closer than 15 feet from the pipeline.
- e. Warning tape, in accordance with A.P.W.A. Uniform Color Code, shall be placed above utility, 12 inches below ground, for a distance of 25 feet on either side of crossing.
- f. Signage shall be placed at crossing as determined appropriate by Buckeye.
- g. Trenchless Excavations:

- [1] Utilities installed by a trenchless excavation method (directional drilling, jacking, slick boring, etc.) shall be reviewed by Buckeye on a **case-by-case basis**.
- [2] Buckeye reserves the right to select the method of crossing for the proposed utility.
- [3] A minimum clearance of 60 inches (5 feet) below the pipeline is required.
- [4] For directional drilling operations, a surface wire tracking system is required to verify the exact location of the drill head.
- [5] A 4 feet by 4 feet excavation window, 24 inches below the pipeline is required for visual inspection of the pipeline to ensure the drill (or bore) does not impact the pipeline.
- [6] Blind boring is not permitted within Buckeye's right-of-way.

3.4.2 **Metallic Utilities:**

- a. Bonds and test leads shall be installed at the expense of and by the Crossing Party where Buckeye deems necessary.
- b. Utilities shall be coated with a non-conductive coating for a distance of 50 feet on either side of the pipeline crossing.
- c. Ductile water pipe shall include nitrile gaskets within 50 feet of the pipeline crossing or anywhere within 25 feet of horizontal offset locations.

3.4.3 **Non-Metallic Utilities:**

- a. Utilities shall be wrapped with tracer wire within the width of the right-of-way.
- b. Natural gas (or other industrial gases) lines shall be encased in a 6-inch envelope of yellow 3,000 psi concrete across the right-of-way.
- c. PVC water pipe shall include nitrile gaskets within 50 feet of the pipeline crossing or anywhere within 25 feet of horizontal offset locations.

3.5 Electrical, Fiber-Optic, and Communications Cables

3.5.1 **General Requirements:**

- a. Cables shall cross perpendicular to the pipeline.
- b. Cables installed parallel to the pipeline shall be reviewed by Buckeye on a **case-by-case basis**. If approved, the cable shall be no closer than 15 feet from the pipeline.
- c. Splice boxes, service risers, energized equipment, etc., are not permitted within the right-of-way.

3.5.2 **Buried Cables:**

- a. Cables are required to cross beneath the pipeline with a minimum clearance of 24 inches. Exceptions to Buckeye's clearance requirements for underground service entrances to single family dwellings will be reviewed on a **case-by-case basis**.
- b. Sand or select fill shall be placed between the pipeline and cable (see Section 2.8).
- c. All cables shall be installed in Schedule 80 PVC pipe and encased in a 6-inch envelope of red 3,000 psi concrete (orange for fiber) across the right-of-way.
- d. Warning tape, in accordance with A.P.W.A. Uniform Color Code, shall be placed above the utility, 12 inches below ground, for a distance of 25 feet on either side of the crossing.
- e. Signage for the crossing shall be placed as determined appropriate by Buckeye.
- f. **Trenchless Excavations:**
 - [1] Utilities installed by a trenchless excavation method (directional drilling, jacking, slick boring, etc.) shall be reviewed by Buckeye on a **case-by-case basis**.
 - [2] Buckeye reserves the right to select the method of crossing for the proposed utility.

- [3] A minimum clearance of 60 inches (5 feet) below the pipeline is required.
- [4] For directional drilling operations, a surface wire tracking system is required to verify the exact location of the drill head.
- [5] A 4 feet by 4 feet excavation window, 24 inches below the pipeline is required for visual inspection of the pipeline to ensure the drill (or bore) does not impact the pipeline.
- [6] Blind boring is not permitted within Buckeye's right-of-way.

3.5.3 **Aboveground Cables:**

- a. A minimum of 20 feet of above-grade clearance for a distance of 25 feet on each side of the pipeline is required.
- b. Mechanical supports and service drops including poles, towers, guy wires, ground rods, anchors, etc., are not permitted within 25 feet of the pipeline.

3.6 Temporary Access Roads and Heavy/Construction Vehicle Crossings

3.6.1 **General Requirements:**

- a. Trucks carrying a maximum axle load up to 15,000 pounds may cross the right-of-way after Buckeye has confirmed a minimum cover of 48 inches over the pipeline.
- b. For all other cases, earthen ramps (see Attachment 6), swamp mats, reinforced-concrete slabs (see Attachment 5), or steel plates may be required. Loading conditions and protection measures will be evaluated and dictated by Buckeye's Engineering Department.
- c. At all crossing locations, the Crossing Party will provide 12" of clean AASHTO 1 stone over the pipeline right-of-way.
- d. During the use of an approved temporary construction road, Buckeye may require that the Crossing Party provide additional protective measures deemed necessary to prevent damage to the pipeline.
- e. Buckeye will limit the number of temporary construction roads constructed by the Crossing Party.

3.7 Railroad Crossings

3.7.1 **General Requirements:**

- a. A minimum clearance of 72 inches is required between railroad tracks and the pipeline.
- b. A minimum cover of 36 inches is required between the bottom of drainage ditches on either side of a railroad and the pipeline.
- c. For railroad main lines, the pipeline crossing must comply with local railroad guidelines that delineate the requirements for carrier pipe, casing pipe, and clearances. Buckeye shall be consulted for the review of any State submittals.
- d. For private spur crossings, Buckeye will determine the railroad entity having jurisdictional authority to dictate crossing requirements.

3.8 Farming and Field Tile

3.8.1 **General Requirements:**

- a. Field tile running parallel to the pipeline shall be spaced 10 feet from the centerline of the pipeline.
- b. Field tile shall cross the pipeline perpendicularly with a clearance of 12 inches above or below the pipeline.

- c. Buckeye will approve the total number of crossings of the pipeline on a **case-by-case basis**.
- d. Deep plowing or “ripping” operations shall be approved by and coordinated with Buckeye.

3.9 Construction-Induced Vibrations

3.9.1 **General Requirements:**

- a. Construction activities that generate ground vibrations, including, but without limitation, pile driving, sheet driving, soil compaction work, jackhammering, or ramming, shall be reviewed by Buckeye on a **case-by-case basis**.
- b. If the Crossing Party anticipates such an activity within 300 feet of the pipeline, then continuous testing monitored by a seismograph located directly over the pipeline at its closest point to the activity must be conducted. The Crossing Party shall provide, at their expense, the monitoring service which must be approved by Buckeye.
- c. The particle velocity of any one component of a three-component seismograph must not exceed 2.0 inches per second as recorded on the seismograph placed directly over the pipeline.

3.10 Blasting Operations

3.10.1 **Blasting within 500 feet of the pipeline right-of-way:**

- a. The Crossing Party must submit a blast plan to Buckeye for review and approval. Verbal and written notice will be given 14 and 21 days respectively.
- b. Blasting plans must include the following information:
 - Dates blasting to occur
 - Explosives type
 - Maximum shot hole depth and diameter
 - Number of holes and spacing
 - Delay pattern
 - Delay types and intervals
 - Depth of overburden
 - Depth of blast area
 - Maximum charge per hole, per delay
 - Show drilling/blasting pattern plan and profile in relation to Buckeye facilities
 - Calculated radiant peak particle velocity (PPV) at varying distances from the pipeline and at the pipeline itself
 - State permit (copy)
 - Blasting contractor qualifications and insurance certificate (copy)
 - Blasting Safety Plan (copy)

The Crossing Party shall complete Attachment 8, “Blasting Plan Submission Form”, and include this form with their submission to Buckeye.

- c. The Crossing Party shall make arrangements for a Buckeye On-site Inspector to be present to witness the blasting operation.

3.10.2 **Blasting within 300 feet of the pipeline right-of-way:**

(Adds to or replaces items in Section 3.10.1)

- a. Blasting shall be monitored by a seismograph located directly over the pipeline at its closest point to the blast hole(s). The Crossing Party shall provide, at their expense, the monitoring service which must be approved by Buckeye.

- b. The particle velocity of any one component of a three-component seismograph must not exceed 2.0 inches per second as recorded on the seismograph placed on the ground directly over the pipeline.
- c. For blast testing, an initial test blast using a maximum charge of one pound shall be performed. The Crossing party shall detonate the first test blast with all necessary monitoring equipment in place to observe the results of the proposed blast design. Each subsequent test blast may be set and detonated only after the seismograph reading from the previous test blast indicates that further blasting can be safely conducted.
- d. Routine production blasting may be initiated after completion of a successful test blast, with allowable charge based on the seismographic vibration recordings of test blasts. However, all blasting must be continuously monitored by a seismograph. The velocity recorded must not exceed the 2.0 inches per second limit noted above.

3.10.3 Blasting within 50 feet of the pipeline right-of-way:
(Adds to or replaces items in Section 3.10.2)

- a. The Crossing Party shall hire a consulting firm that specializes in underground blasting to conduct the seismograph survey and certify the results.
- b. Buckeye will approve the Crossing Party's selection of consulting firms that will conduct the seismographic surveys before starting any blasting operation.

3.10.4 Special Requirements:

- a. For multiple-delay blasting, the Crossing Party shall begin the blasting sequence at the charge closest to the pipeline and progress away from the pipeline.
- b. If seismographic readings above the limit stated in item 3.10.2.d of this section are recorded, the pipeline must be exposed and inspected for possible damage and/or product release. The Crossing Party conducting blasting operations is responsible for all expenses related to the exposure and any subsequent repairs necessitated by the operation.
- c. At Buckeye's request, the Crossing Party shall install sheet piling, open trench channels, and/or matting to protect the pipeline during blasting operations.

3.11 Seismic Vibrating Operations

3.11.1 Seismic vibrating within 500 feet of the pipeline right-of-way:

- a. The Crossing Party must submit a seismic vibrating plan to Buckeye for review and approval. Verbal and written notice will be given 14 and 21 days respectively.
- b. Seismic vibrating plans, when using Vibroseis System Vibrators to radiate ground vibrations, must include information on soil conditions and depth of exploration, the anticipated number and type of vibrations, type and weight of vehicle, and peak force of equipment.
- c. The peak force by vehicle weight shall not exceed 45,000 pounds.
- d. The Crossing Party shall also make arrangements for a Buckeye On-Site Inspector to be present to witness the seismic vibrating operation.

3.11.2 Seismic vibrating within 100 feet of the pipeline right-of-way:

- a. Vibration shall be monitored by a seismograph located directly over the pipeline at its closest point to the vibrator(s). The Crossing Party shall provide, at their expense, the monitoring service which must be approved by Buckeye.
- b. The Crossing party shall determine and limit the maximum peak force allowed under continuous seismographic vibration monitoring such that the peak particle velocity will not exceed 2.0 inches per second.

- c. Seismic vibration surveys shall not be conducted closer than 100 feet to the pipeline.

3.11.3 **Special Requirements:**

- a. If seismographic readings above the limit stated in item 3.11.2.b of this section are recorded, the pipeline must be exposed and inspected for possible damage and/or product release. The Crossing Party conducting seismic vibrating operations is responsible for all expenses related to the exposure and any subsequent repairs necessitated by the operation.
- b. At Buckeye's request, the Crossing Party shall install sheet piling and/or open trench channels to protect the pipeline during seismic vibrating operations.

3.12 Wind Turbines

3.12.1 **Setback Distance from Pipelines**

- a. Wind turbine structures shall be set back from any Buckeye pipeline at least a distance equal to 110% of the structure height, which is defined as the height of the entire wind turbine system as measured from the bottom of the base to the highest vertical point of the system including the base and tower and the highest reach of the turbines or blades.
- b. No facilities associated with a wind turbine installation project shall be permitted to be installed within the pipeline easement.
- c. Warning lights shall be installed on all wind turbines that are located within 1,200 feet of any Buckeye pipeline.

3.12.2 **Construction Equipment and Crane Crossings**

- a. All temporary access roads and heavy/construction vehicle crossings shall comply with Section 3.6 above.
- b. Where cranes and other maintenance vehicles will need to cross Buckeye pipelines on a routine permanent basis for maintenance of the turbine(s), permanent crossing locations must be established, an encroachment agreement must be signed by the landowner and facility owner, and permanent crossing protections must be installed to the satisfaction of Buckeye.
- c. Construction materials or equipment shall not be transported longitudinally over Buckeye's pipelines.

3.12.3 **Underground Utilities**

- a. Cables and electrical conduit shall cross underneath BUCKEYE'S Pipeline(s) with a minimum clearance of 24 inches and shall be installed in steel casing meeting at least minimum requirements of the National Electric Code for 10 feet on each side of the BUCKEYE'S Pipeline(s). Electrical conductors/cable shall be adequately shielded and be impervious to hydrocarbon liquids; provided, that no casing is required if there is a minimum vertical clearance of 48 inches. An additional 36 inches of clearance is required if a conventional bore/utility push or directional drill is utilized. Electric identification warning tape shall be installed 12 inches above the cable for a distance of 25 feet on each side of the BUCKEYE'S pipeline(s). Red aboveground "Warning Buried Cable" markers shall be placed over the cable at a distance of 25 feet on each side of the BUCKEYE'S pipeline(s) to properly identify the buried cable.

- b. BUCKEYE may install a test station, including test coupon, reference electrode, and remote monitor at each electrical cable crossing between BUCKEYE'S Pipelines(s) and CROSSING PARTY casing pipe. The reasonable cost of such installation shall be submitted to CROSSING PARTY for review and approval, which approval shall not be unreasonably delayed, conditioned or withheld, and, upon approval, the reasonable cost shall be prepaid to BUCKEYE by CROSSING PARTY.
- c. BUCKEYE may commission an AC Arc Fault Study, specific to the CROSSING PARTY'S project encroachments for adequate AC Arc Fault protection of and separation from BUCKEYE'S facilities. BUCKEYE will be responsible for the engineering, design and installation of AC mitigation and Lightning suppression systems, as deemed necessary by the AC Arc Fault Study. The reasonable cost of such AC remediation and Lightning suppression systems shall be submitted to CROSSING PARTY for review and approval, which approval shall not be unreasonably delayed, conditioned or withheld, and, upon approval such reasonable cost will be prepaid by CROSSING PARTY to BUCKEYE.

4.0 Deviations and Exceptions

- 4.1 When and where special circumstances dictate, deviation from these requirements must be formally approved by Buckeye in writing prior to commencement of any excavation or other construction activity that may impact the pipeline. Any such deviations must be explained and documented and provided to Buckeye for review and approval.

5.0 Additional Information and Buckeye Contacts

- 5.1 Should you have any questions regarding pipeline rights-of-way or your specific easement, contact Buckeye's Right of Way Department at the applicable phone number listed in [Attachment 2](#).
- 5.2 Should you have any questions regarding Buckeye's engineering requirements, contact Buckeye's Encroachment Design Reviewer at encroachmentreviews@buckeye.com.

Attachment 1: Buckeye Facility Locations and Phone Numbers

Alabama	Birmingham	(205) 369-0179
	Montgomery	(334) 309-4710
California	San Diego	(714) 269-9028
Connecticut & Massachusetts	Wethersfield	(860) 529-7781
	New Haven	(203) 469-3479
Florida	Port Everglades	(954) 522-8464
Georgia	Birmingham (AL)	(205) 369-0179
Illinois	Argo	(708) 259-1352
	Lemont (West Shore)	(708) 227-0962
	Mazon	(815) 448-2491
	Hartford	(618) 255-1100
Indiana	Hammond	(219) 989-8601
	Hammond (West Shore)	(708) 227-0962
	Huntington	(260) 356-5802
Iowa	Cedar Rapids	(708) 259-1352
	Council Bluffs	(712) 366-9461
	Des Moines	(515) 226-4017
	Ottumwa	(641) 684-6789
Louisiana	Liberty (TX)	(936) 336-5773
Maine	South Portland	(207) 767-2672
Michigan	Wayne	(734) 721-8834
Missouri	North St. Louis	(314) 231-2000
	Sugar Creek	(816) 836-6000
	Burlington Junction	(660) 725-3386
Nevada	Reno	(760) 802-1535
New Jersey	Linden	(908) 374-5301
New York	Auburn	(315) 253-5395
	New York City	(718) 656-5746
North Carolina	Goldsboro	(919) 778-2712
Ohio	Lima	(419) 993-8025
	Mantua	(330) 274-2234
	Toledo	(419) 698-8190
Pennsylvania	Boothwyn	(610) 459-3441
	Coraopolis	(412) 264-7432
	Duncansville	(814) 695-4852
	Malvern	(610) 695-8000
	Mechanicsburg	(717) 766-7633
	Macungie	(484) 232-4218
Tennessee	Memphis	(901) 395-0122
Texas	Liberty	(936) 336-5773
Wisconsin	Milwaukee (West Shore)	(708) 227-0962
	Madison (West Shore)	(815) 964-3727

Attachment 2: Right of Way & Engineering Contacts

Name	Responsibility	Phone / Address / Email
David Boone	Sr. Manager, Right of Way, Real Estate, and Damage Prevention	(610) 904-44015 TEK Park, 9999 Hamilton Blvd. Breinigsville, PA 18031 dboone@buckeye.com
Chris McPike	Sr. Specialist, Right of Way <i>Central District:</i> Eastern Ohio, Pennsylvania (Central & Western)	(412) 299-7019 993 Brodhead Road, Ste 100 Moon Township, PA 15108 CMcPike@buckeye.com
Marty White	Sr. Specialist, Right of Way <i>West/Central District:</i> Michigan, Ohio (except for Eastern Ohio), Indiana (except for Northwestern Indiana)	(419) 993-8008 940 Buckeye Road Lima, OH 45804 MWhite@buckeye.com
Michael Norris	Sr. Specialist, Right of Way <i>West District:</i> Northern & Central Illinois, Northwestern Indiana, Wisconsin	(219) 313-5321 12920 Bell Road Lemont, IL 60439 MNorris@buckeye.com
Wesley Pekarek	Specialist, Right of Way I <i>West District:</i> Iowa, Missouri, Southern Illinois	(816) 836-6096 1315 N. Sterling Ave. Sugar Creek, MO 64054 WPekarek@buckeye.com
Ronald Bates	Sr. Specialist, Right of Way <i>East District:</i> Eastern Pennsylvania, New York (Upstate), Rhode Island, Maine, Massachusetts, Maryland, Virginia	(484) 232-4482 5002 Buckeye Road Emmaus, PA 18049 RBates@buckeye.com
Emily Litwa	Specialist, Right of Way I <i>Northeast District:</i> New Jersey, Connecticut, Massachusetts, New York	(732)-692-5423 750 Cliff Rd Port Reading, NJ 07064 ELitwa@buckeye.com
Dave Jones	Specialist, Right of Way II <i>Encroachment Design Review:</i> East, Northeast, Central, West Districts	(610)-904-4404 5 TEK Park, 9999 Hamilton Blvd. Breinigsville, PA 18031 DAJones@buckeye.com
Daniel Mangum	Sr. Specialist, Right of Way & Development <i>South District:</i> Texas, Louisiana, Tennessee, Alabama, Georgia, South Carolina, Nevada, Florida, North Carolina	(832) 325-1626 One Greenway Plaza, Suite 600 Houston, Texas 77046 DMangum@buckeye.com
Teriann Williams Jeannette Fluke	Right of Way Coordinators <i>Easements and Records:</i> Supporting East, Northeast, Central, and West Districts	(610) 904-4418 (610) 904-4404 5 TEK Park, 9999 Hamilton Blvd. Breinigsville, PA 18031 TEWilliams@buckeye.com JFluke@buckeye.com

Attachment 3: State One Call Systems (National One Call System - Dial 811)

State	One Call Program	Phone No.	Website
Alabama	Alabama 811	(800) 292-8525	www.al811.com
California - North	USA North of Central / Northern California & Nevada	(800) 227-2600	www.usanorth.org
- South	Dig Alert & Underground Service Alert South	(800) 422-4133	www.digalert.org
Connecticut	Call Before You Dig	(800) 922-4455	www.cbyd.com
Florida	Sunshine State One Call	(800) 432-4770	www.callsunshine.com
Georgia	Georgia 811	(800) 282-7411	www.georgia811.com
Illinois - Non-Chicago	Julie, Inc.	(800) 892-0123	www.illinois1call.com
- Chicago	DIGGER - Chicago Utility Alert Network	(312) 744-7000	www.cityofchicago.org/transportation
Indiana	Indiana 811	(800) 382-5544	www.indiana811.org
Iowa	Iowa One Call	(800) 292-8981	www.iowaonecall.com
Louisiana	Louisiana One Call System, Inc.	(800) 272-3020	www.laonecall.com
Maine	Dig Safe System Inc.	(888) 344-7233	www.digsafe.com
Massachusetts	Dig Safe System Inc.	(888) 344-7233	www.digsafe.com
Michigan	MISS Dig System, Inc.	(800) 482-7171	www.missdig.net
Missouri	Missouri One Call System, Inc.	(800) 344-7483	www.mo1call.com
Nevada	USA North of Central / Northern California & Nevada	(800) 227-2600	www.usanorth.org
New Jersey	New Jersey One Call	(800) 272-1000	www.nj1-call.org
New York	Dig Safely New York	(800) 962-7962	www.digsafelynewyork.com
New York City & Long Island	New York C&LI, Inc.	(800) 272-4480	www.newyork-811.com
North Carolina	North Carolina 811	(800) 632-4949	www.nc811.org
Ohio	Ohio Utilities Protection Service	(800) 362-2764	www.oups.org
Pennsylvania	Pennsylvania One Call System, Inc.	(800) 242-1776	www.pa1call.org
Rhode Island	Dig Safe System Inc.	(800) 344-7233	www.digsafe.com
South Carolina	South Carolina 811 / PUPS	(888) 721-7877	www.sc811.com
Tennessee	Tennessee 811	(800) 351-1111	www.tnonecall.com OR www.tennessee811.com
Texas	Texas 811 OR Lone Star Notification Center	(800) 344-8377 (800) 669-8344	www.texas811.org www.lsnconeall.com
Wisconsin	Wisconsin Diggers Hotline	(800) 242-8511	www.diggershotline.com

Attachment 4: Application for Design Plan Submission and Encroachment Review

PROJECT INFORMATION & LOCATION

BUCKEYE PARTNERS, L.P.

Project Title

Project Address

City

State

Zip Code

Latitude

Longitude

Municipality

County

APPLICANT INFORMATION:

Name and Title of Applicant

Company

Phone Number

Address

City

State

Zip Code

Email address

Fax Number

LEGAL NAME OF INDIVIDUAL, COMPANY, OR ENTITY TO WHICH PERMISSION WILL BE GRANTED:

Name

Name and Title of authorized signatory for company or entity

Address

City

State

Zip Code

PROJECT INVOLVES THE FOLLOWING IMPACTS TO BUCKEYE'S FACILITIES (CHECK ALL THAT APPLY):

- ☐ Cover, grading, and drainage pattern changes
- ☐ Aboveground and/or underground structures
- ☐ Road, driveway, sidewalks, and parking areas
- ☐ Utility crossings including gas, water (steam), sewer (storm/sanitary) – include trench backfill detail
- ☐ Electrical, fiber-optic, and communications cables
- ☐ Temporary access roads for the crossing of heavy/construction equipment
- ☐ Railroad crossings
- ☐ Farming and field tile
- ☐ Construction-induced vibrations
- ☐ Blasting operations (attach BLASTING PLAN)
- ☐ Seismic vibrating operations (attach SEISMIC VIBRATING PLAN)
- ☐ Exposure of the pipeline (attach SUPPORT PLAN)
- ☐ Boring, drilling, or tunneling near the pipeline (attach DRILL PLAN)
- ☐ Other: _____

APPLICATION MUST CONTAIN THE FOLLOWING:

- ☐ Completed and Signed "Application for Design Plan Submission and Encroachment Review" Form
- ☐ Encroachment Application Fee** (see guidelines below)
- ☐ Design Plans (1 paper copy, 1 electronic copy), depicting the following:
 - ☐ Field-verified location of Buckeye pipeline(s) location

_____ Name of Buckeye Employee	_____/_____/_____ Date of Pipeline Locating Activity	_____ Design One Call No.
--	--	-------------------------------------

- ☐ Field-verified depth of Buckeye pipeline(s) along all proposed road or utility crossings, drainage channels, and all other areas of proposed grade change within the pipeline right-of-way (attach a copy of any field data provided by Buckeye Representative)

_____ Name of Buckeye Employee	_____/_____/_____ Date of Pipeline Depth Investigation
--	--

- ☐ Buckeye pipeline(s) labeled "____-inch High Pressure Petroleum Products Pipeline" (line type "-HPPPP-")
- ☐ Buckeye included on Utilities List, and Local Contact and phone number on plans
- ☐ Buckeye Pipeline(s) highlighted in yellow. List all plan sheets on which Buckeye facilities are located:

-
- ☐ Location of ground disturbances (blasting, seismic testing, pile driving, jackhammering, etc. within 1,500 feet of Buckeye pipeline(s))
 - ☐ Proposed location(s) where construction equipment will cross the pipeline right-of-way
 - ☐ Structure setback distances from the pipeline right-of-way and from the nearest pipeline
 - ☐ Proposed landscaping within 25 feet of either side of the pipeline(s)
 - ☐ Any permanent fencing that will limit/cumbersome Buckeye's access to the pipeline right-of-way
 - ☐ If the drainage pattern will be altered in any way over the Buckeye pipeline(s), a drainage plan that identifies new flow paths and all inlet/outfall/collection points
 - ☐ Right-of-Way Use Restrictions specification included as part of final design plan (can be done by adding a drawing sheet to plans and appending (cut and paste) the specification onto this sheet.

For property improvements that involve grade/pavement alterations, road work (new construction or improvements of existing), utility crossings (buried and overhead), or other subsurface or on-surface structure installations within Buckeye's right-of-way:

- ☐ Separate plan and profile drawing of Buckeye pipeline(s) for existing and proposed conditions.
- ☐ Subgrade details that show materials and thickness of each paving layer/course.
- ☐ Amount of existing cover that will be removed or new cover added over the pipeline(s), and proposed final grade amount of cover over the pipeline(s).
- ☐ Clearances between Buckeye's pipeline(s) and any existing and new (buried or overhead) utilities that cross the pipeline right-of-way.
- ☐ Show the clearances between Buckeye's pipeline(s) and each proposed substructure at the two closest reference points.
- ☐ For any utility to be installed via boring, drilling, or tunneling, include a detailed procedure of this work with your design plans. Note: "Blind" boring is not permitted. Buckeye's pipeline(s) must be exposed during the bore operation to ensure that the bore head crosses safely underneath the pipeline(s).

- ☐ Indicate any areas of disturbance or other work that will require Buckeye's pipeline(s) to be exposed in order to perform your work.
- ☐ **Supplemental Plan Information (as applicable)**
- ☐ Blasting Vibrating Plan
- ☐ Seismic Vibrating Plan
- ☐ Support Plan
- ☐ Drill Plan

SUBMIT PLANS TO:

Buckeye Partners, L.P.
ROW Department
Attn: Encroachment Review
5 Tek Park, 9999 Hamilton Blvd.
Breinigsville, PA 18031

OR

encroachmentreviews@buckeye.com
With subject line reading
"Encroachment Review Application"

Buckeye requires a minimum of 60 days for technical review upon receipt of complete application with all relevant fees and complete and accurate design plans. Submission of plans electronically to the above email address is encouraged and acceptable, but signed application and fees must follow by mail.

Relocation or Modification – Should the initial encroachment review result in a determination that Buckeye facilities must be relocated or modified because of the request, additional review time may be required. A Feasibility Study will be performed to prepare a scope of work, cost estimate, schedule and project plan, the cost of which will be borne by a party or parties other than Buckeye and must be paid before the relocation or modification will commence. A Technical Services Agreement between Buckeye and the responsible entity will be prepared to specify the duties of each party. A Letter of No Objection or Encroachment Agreement will be issued which will authorize the construction of the proposed encroachment under certain terms and conditions.

Permission / Notification - A fully-executed Letter of No Objection, Encroachment Agreement or Technical Services Agreement is needed prior to construction. Buckeye must be notified 10-days prior to construction to allow for the scheduling of a Buckeye representative to be present. It is also the encroaching entity's responsibility to notify the owners of any other pipelines, communication lines, other third party property or facility owners located within the proposed project area and to secure any additional needed rights from these parties where Buckeye's rights are limited.

APPLICATION FEES: A non-refundable Encroachment Application Fee must accompany all encroachment review requests for private development within Buckeye's right-of-way. Any request submitted without the required application fee, or that does not contain the specified information in the format requested on the application, may not be considered. Remit payment by check payable to Buckeye Partners, L.P. Buckeye may require a developer to enter an agreement to pay any outside consultant costs that Buckeye deems necessary for a complete review of the proposed encroachment(s).

Initial Encroachment Application Fee is \$2,500. Following initial review, all necessary plan resubmissions until plan approval shall be accompanied by a **Resubmission Fee of \$750.**

Small Project Application Fee is \$500. This reduced fee is reserved solely for single utility line service crossings or requests for installation of a fence or other residential-related improvement within Buckeye's pipeline easement.

I hereby authorize Buckeye to contact the Engineer/Survey firm which prepared the drawings, survey and attachments.

I certify that the information provided is accurate and I realize that incomplete information may delay processing or invalidate this application.

Signature of Applicant

By: _____

Name: _____ Date: _____

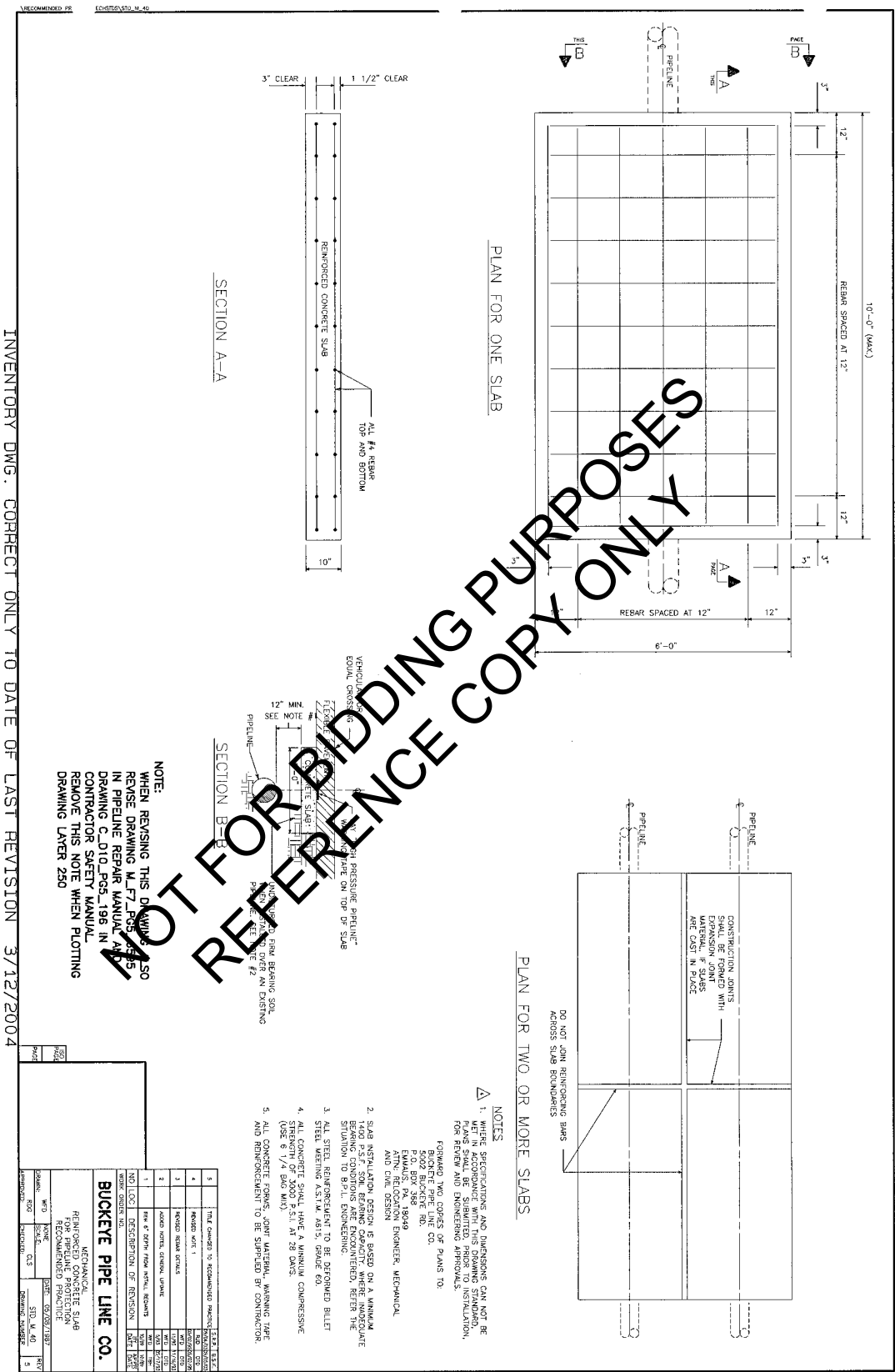
Title: _____

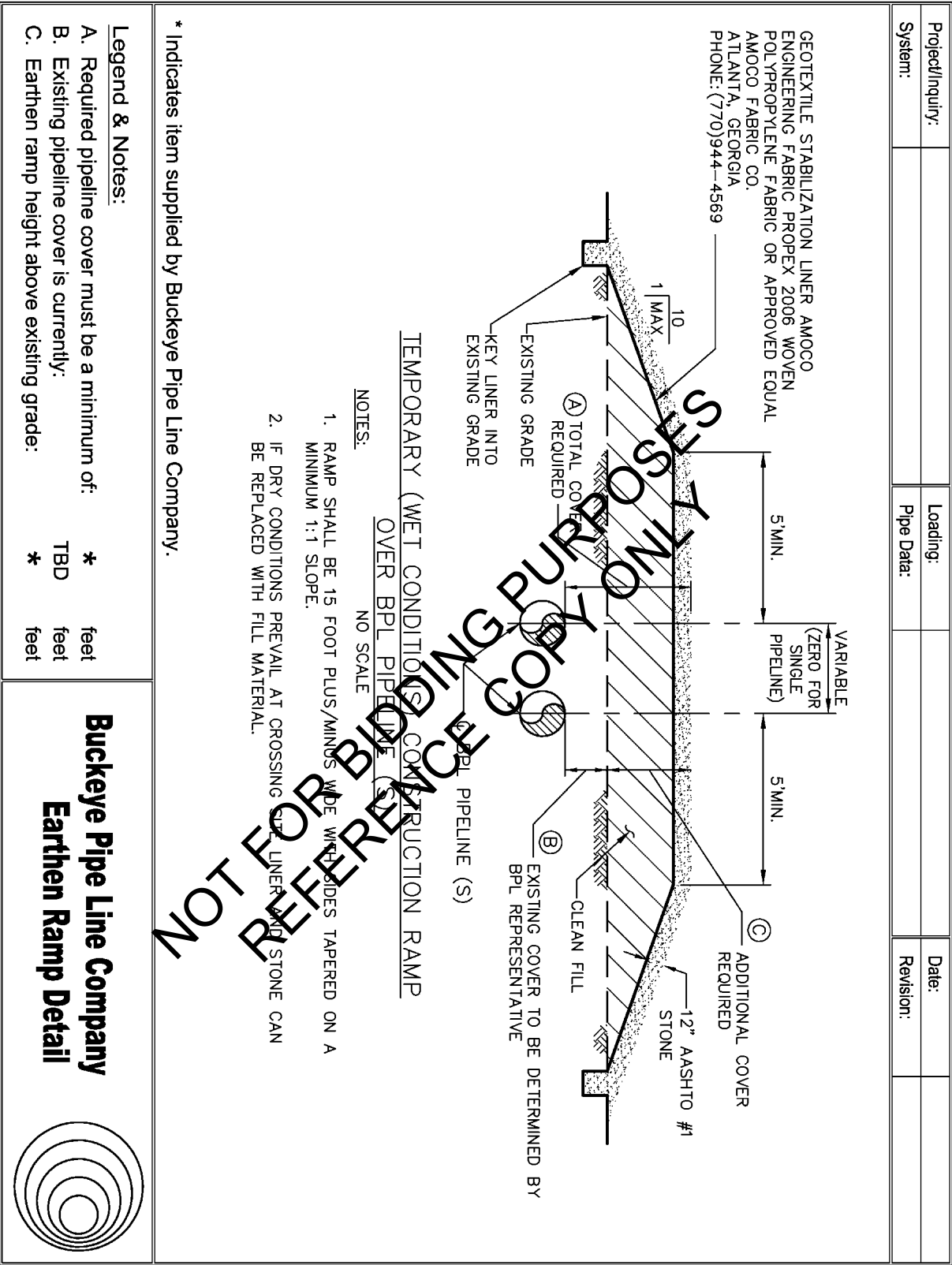
OFFICIAL USE ONLY

DATE REC'D: _____

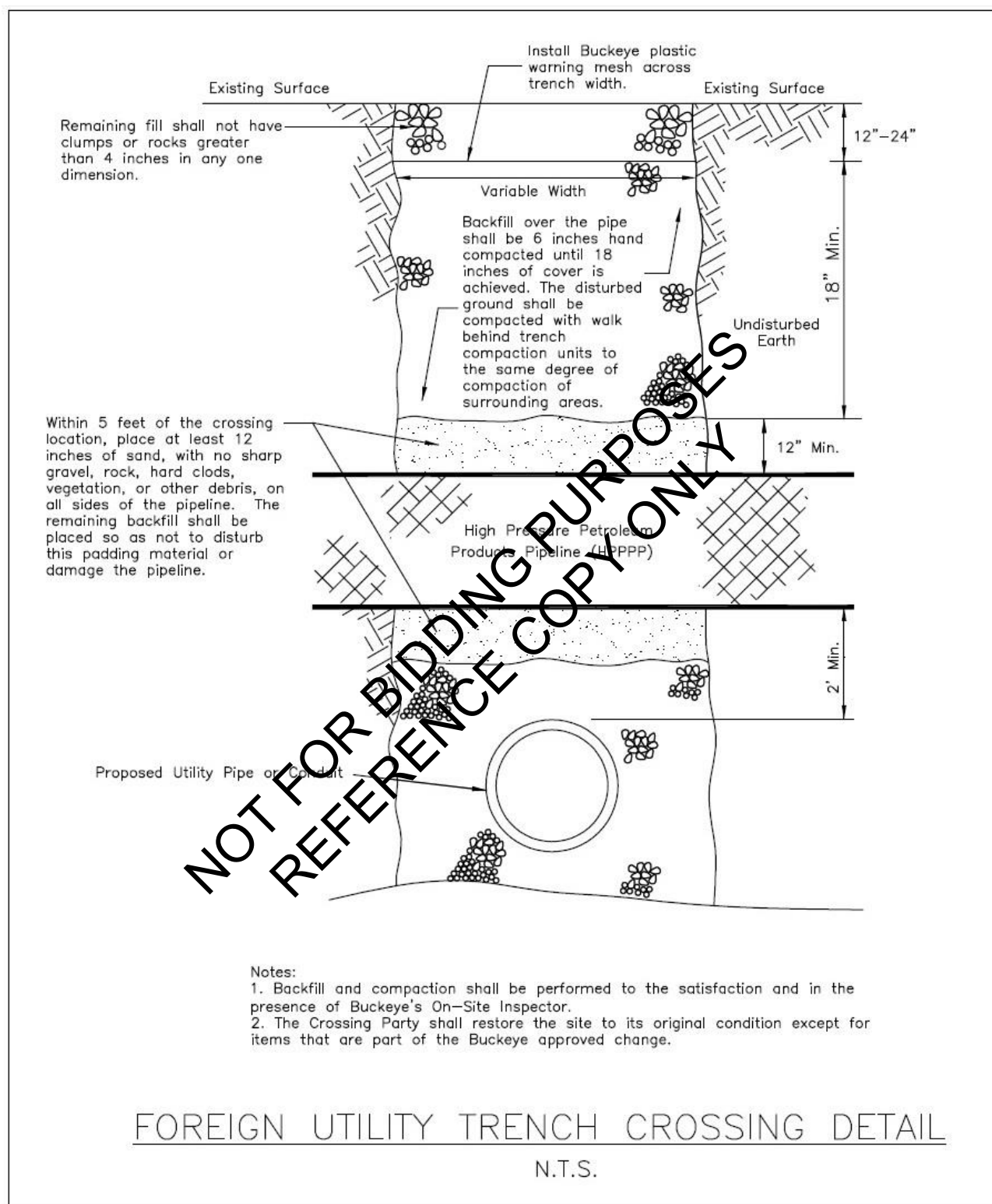
ENCROACHMENT

REVIEW NO.: _____





Attachment 7: Foreign Utility Trench Crossing Detail



Attachment 8: Blasting Plan Submission Form

INFORMATION SECTION	
Blasting Contractor -	Contracted by -
Company Name: _____	Company Name: _____
Phone: _____	Address: _____
Email Address: _____	_____
Contact Person: _____	Contact Person: _____
Project Name: _____	
Address: _____	
*Latitude: _____	
*Longitude: _____	
Location and Distance (in feet) to Nearest Buckeye Pipeline: _____	

Date of Blasting: _____	

EXPLOSIVES SECTION	
Type of Explosives: _____	
Max. Charge / Hole (lbs): _____	
Charge Delay (ms): _____	
No. of Holes: _____	
Max. Depth of Charge (ft): _____	
Max. Diameter of Charge (in): _____	
Calculated Particle Velocity at a point -	
Depth of Blast Area (ft): _____	300 feet from blasting event (in/sec): _____
Depth of Overburden (ft): _____	200 feet from blasting event (in/sec): _____
Type of Rock to be Blasted: _____	100 feet from blasting event (in/sec): _____
Density of Rock (lbs/cu-ft): _____	Directly above pipeline (in/sec): _____ @ _____ ft. _____

ATTACHMENT CHECKLIST
<input type="checkbox"/> Drilling/Blasting Pattern Sketch - include all depths, measurements, and delay patterns relative to Buckeye facility involved and each charge.
<input type="checkbox"/> State Approval Letter
<input type="checkbox"/> Blasting Contractor's Qualifications
<input type="checkbox"/> Blasting Contractor's Insurance Certificate
<input type="checkbox"/> Blasting Contractor's Safety Plan
OMMISSION OF ANY INFORMATION REQUESTED ABOVE WILL DELAY YOUR BLASTING PLAN REVIEW
Buckeye requires a minimum of 14 days for technical review upon receipt of complete and accurate blasting plans

Attachment 9: Excavation Safety Checklist

195 F-09, FORM A – EXCAVATION SAFETY CHECKLIST

The information noted on this form is intended to communicate general information about our pipeline(s) and is not intended to be solely relied upon by any party for the purpose of excavation or any similar purpose.

By law, to enable all participating utilities time to mark their facilities, the **One Call Center** in your state requires notification by calling 811 prior to any excavation. Buckeye Partners, L.P. is a member of this One Call enterprise and will automatically be notified through this system. In addition, a Buckeye inspector will perform and/or review with the excavator representative the applicable checklist items below.

Pipeline Locate Activity:

- ☐ If plans are available, requested a copy of the written project plans and drawings for review with the excavator and/or engineer. Had the excavator and/or engineer explain the extent of the work area, location and depth of the excavation, type of proposed utilities, location of proposed utilities, number of utility crossings, etc.
- ☐ Established the pipeline(s) location and marked the line(s) per state One Call requirements throughout the entire work area.
- ☐ Photographed all established pipeline markings throughout the work area.

Communication with the Excavator and/or Engineer:

- ☐ The excavator and/or engineer was advised that a Buckeye inspector must:
 - Monitor the excavation site daily when work is performed within 25 feet of a Buckeye pipeline.
 - Observe continuously all excavation and backfill activity performed within 10 feet of a Buckeye pipeline or during the installation of any utility across a Buckeye pipeline facility.
 - In addition, the excavator was instructed to call 800-331-4115 if they were ready to excavate within either above distance of a Buckeye pipeline and a Buckeye inspector was not present. When called a Buckeye inspector will be sent to perform the inspection, which is free of charge.
- ☐ The excavator was advised that only backhoes or trackhoes with a steel plate welded across the teeth of the bucket are permitted to be used during excavation work around a Buckeye pipeline.
- ☐ The excavator was advised that the Buckeye inspector is required by law to perform an external inspection of any Buckeye pipeline exposed during excavation activity. The excavator understands that he/she is responsible to provide an OSHA compliant excavation, allowing the Buckeye inspector safe ingress and egress to examine our exposed pipeline.
- ☐ Walked through the work area with the excavator and communicated the locations of all Buckeye pipelines in the planned work area.
- ☐ Discussed the number of pipelines, pipe size(s), approximate pressures, approximate depths, excavation tolerance zones, hand digging requirements, and the hazards and characteristics of product(s) in the pipeline system(s) located in the planned work area.
- ☐ The excavator was advised to call the One Call Center 811 or contact Buckeye, if the Buckeye markings are destroyed or need to be refreshed in the planned work area. This service is provided free of charge.
- ☐ The excavator was advised that before any exposed Buckeye pipeline can be backfilled, the Buckeye inspector will direct the placement of an orange warning mesh over the pipeline.
- ☐ The excavator was advised that any contact with the pipeline, pipeline coating, test station wiring, or anode beds **must be reported to Buckeye prior to backfilling the excavation** to permit further inspection of the damage to assure continued safe pipeline operations.
- ☐ The excavator was advised that failure to comply with the conditions outlined above would result in Buckeye requiring the excavator to expose the pipeline again to allow an examination of the pipeline at the excavator's expense. If damage to the pipeline is discovered, Buckeye may seek monetary compensation for all repair costs. Buckeye may also report this activity to all concerned parties (State One Call Center, Regulatory Agencies, Principal Contractor, Excavator's Insurance Company, etc.).

If you are unable to reach the representative designated below, or in case of an emergency, request assistance by calling **1-800-331-4115**.

One Call Ticket:		Line Segments:		
Work Order:		Mile Posts:		
Nearest Street				

Buckeye Information		Property Owner / Excavator /Engineer	
Date:		Name:	
Name:		Phone:	
Cell Phone:		Signature:	

APPENDIX E -

CITY OF NEW HAVEN PLAN APPROVAL

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

NEW HAVEN CITY PLAN COMMISSION SITE PLAN REVIEW

RE: **MITCHELL DRIVE.** Site Plan Review for Regulator 012 improvements and closure.
(Owner: City of New Haven; Applicant: Thomas Sgroi for GNHWPCA; Agent: Mario Riconzi of GNHWPCA)

REPORT: 1533-06

ACTION: Approval with Conditions

STANDARD CONDITIONS OF APPROVAL

1. Pursuant to State Statute, this site plan and soil erosion and sediment control plan approval is valid for a period of five (5) years following the date of decision, until July 19, 2022. Upon petition of the applicant, the Commission may, at its discretion, grant extensions totaling no more than an additional five (5) years to complete all work connected to the original approval.
2. The applicant shall record on the City land records an original copy of this Site Plan Review report (to be provided by the City Plan Department) and shall furnish written evidence to the City Plan Department that the document has been so recorded (showing volume and page number) prior to City Plan signoff on final plans.
3. Construction Operations Plan/Site Logistics Plan, including any traffic lane/sidewalk closures, temporary walkways, detours, signage, haul routes to & from site, and construction worker parking plan shall be submitted to the Department of Transportation, Traffic and Parking for review and approval to prior to City Plan signoff on final plans for building permit.
4. Any proposed work within City right-of-way will require separate permits.
5. Final determination of traffic markings, V-loc locations, signs, and traffic controls on site and on the perimeter of the site will be subject to the approval of the Department of Transportation, Traffic, and Parking.

Submission: SPR Application Packet including DATA, WORKSHEET, SITE, and SESC forms.
NARRATIVE attached. Received June 22, 2017.

PROJECT SUMMARY:

Project: Combined sewer overflow improvements

Address: Mitchell Drive

Financing: 50% DEEP Clean Water Fund grant, 50% GNHWPCA

Project Cost: \$10.4 million (for all CSO improvement projects)

Owner: City of New Haven

Applicant: Thomas Sgroi for GNHWPCA

Agent/Site Engineer: Mario Riconzi of GNHWPCA

City Lead: City Plan Department

Phone: 203-466-5280 x328

Phone: 203-466-5280 x346

Phone: 203-946-6379

BACKGROUND**Previous CPC Actions:**

None.

Zoning:

Not applicable.

Site description/existing conditions:

The project site is within the East Rock neighborhood of the City, extending from the intersection of Nicoll Street and Canner Street underneath a neighboring building to Mitchell Drive. The surrounding uses are a mix of residential homes, light industry, commercial uses, parkland, and the campus of Wilbur Cross High School.

Proposed activity:

The project is part of a series of projects that aim to reduce the combined sewer overflow to the West River and New Haven Harbor from an estimated 32 million gallons (MG)/year in 2016 to 19 MG/year. This project will rehabilitate the existing sewer that runs from the Nicoll Street/Canner Street intersection easterly beneath the building to Mitchell Drive and continuing southerly to Willow Street. Work will involve minor excavations at manholes as well as bypass pumping of flows around the area to be lined. Once the piping has been lined, there will be some additional work within manholes to close the existing Regulator 012. Overflow pipes will be filled with controlled low-strength material. The drain pipes will continue to convey stormwater to the Mill River.

Motor vehicle circulation/parking/traffic:

Detours will be necessary during construction. The applicant is evaluating possible detour routes, which must be approved by the Transportation, Traffic, and Parking (TTP) Department prior to sign-off for permits.

Bicycle parking:

Not applicable.

Trash removal:

Not applicable.

Signage:

Final determination of traffic markings, V-loc locations, signs, and traffic controls on site and on the perimeter of the site will be subject to the approval of the Department of Transportation, Traffic, and Parking.

Sec. 58 Soil Erosion and Sedimentation Control:

- ☒ **Class A** (minimal impact)
- ☐ **Class B** (significant impact)
- ☐ **Class C** (significant public effect, hearing required)

Cubic Yards (cy) of soil to be moved, removed or added: 5 CY

Responsible Party for Site Monitoring: Luigi Di Monaco of GNHWPCA

This individual is responsible for monitoring the site to assure there is no soil or runoff entering City catch basins or the storm sewer system. Other responsibilities include:

- monitoring soil erosion and sediment control measures on a daily basis;
- assuring there is no dust gravitation off site by controlling dust generated by vehicles and equipment and by soil stockpiles during both the demolition and construction phases;
- determining the appropriate response, should unforeseen erosion or sedimentation problems arise; and
- ensuring that SESC measures are properly installed, maintained and inspected according to the SESC Plan.

Should soil erosion problems develop (either by wind or water) following issuance of permits for site work, the named party is responsible for notifying the City Engineer within twenty-four hours of any such situation with a plan for immediate corrective action.

All SESC measures are required to be designed and constructed in accordance with the latest Standards and Specifications of the *Connecticut Guidelines for Soil Erosion and Sediment Control*.

Sec. 60 Stormwater Management Plan:

Although the project is located in the coastal management area, because the project is a stormwater improvement demonstration of compliance with Section 60 standards is not necessary.

Sec. 60.1 Exterior Lighting: Not applicable.

Sec. 60.2 Reflective Heat Impact: Not applicable.

Project Timetable:

Construction is expected to begin sometime in 2018 and last approximately two months.

SITE PLAN REVIEW

Plans have been reviewed by the Site Plan Review team with representatives from the Departments of City Plan, City Engineer, Building, Disabilities Services and Transportation, Traffic and Parking and have been found to meet the requirements of City ordinances, Regulations, and standard details.

COASTAL SITE PLAN REVIEW

Exempt under Section 55(f)(3) of the New Haven Zoning Ordinance.

ACTION

The City Plan Commission approves the submitted Site Plans subject to conditions on Page 1.

ADOPTED: July 19, 2017
Edward Mattison
Chair

ATTEST:
Kanya M. Silvarg, AIA
Executive Director

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

NEW HAVEN CITY PLAN COMMISSION SITE PLAN REVIEW

RE: QUINNIPIAC AVENUE. Site Plan Review for regulator 020 improvements and closure. (Owner: City of New Haven; Applicant: Thomas Sgroi for GNHWPCA; Agent: Mario Riconzi of GNHWPCA)

REPORT: 1533-07

ACTION: Approval with Conditions

STANDARD CONDITIONS OF APPROVAL

1. Pursuant to State Statute, this site plan and soil erosion and sediment control plan approval is valid for a period of five (5) years following the date of decision, until July 19, 2022. Upon petition of the applicant, the Commission may, at its discretion, grant extensions totaling no more than an additional five (5) years to complete all work connected to the original approval.
2. The applicant shall record on the City land records an original copy of this Site Plan Review report (to be provided by the City Plan Department) and shall furnish written evidence to the City Plan Department that the document has been so recorded (showing volume and page number) prior to City Plan signoff on final plans.
3. Construction Operations Plan/Site Logistics Plan, including any traffic lane/sidewalk closures, temporary walkways, detours, signage, haul routes to & from site, and construction worker parking plan shall be submitted to the Department of Transportation, Traffic and Parking for review and approval to prior to City Plan signoff on final plans for building permit.
4. Any proposed work within City right-of-way will require separate permits.
5. Final determination of traffic markings, V-loc locations, signs, and traffic controls on site and on the perimeter of the site will be subject to the approval of the Department of Transportation, Traffic, and Parking.

Submission: SPR Application Packet including DATA, WORKSHEET, SITE, and SESC forms.
NARRATIVE attached. Received June 22, 2017.

PROJECT SUMMARY:

Project: Combined sewer overflow improvements
Address: Quinnipiac Avenue
Financing: 50% DEEP Clean Water Fund grant, 50% GNHWPCA
Project Cost: \$10.4 million (for all GSW improvement projects)
Owner: City of New Haven
Applicant: Thomas Sgroi for GNHWPCA
Agent/Site Engineer: Mario Riconzi of GNHWPCA
City Lead: City Plan Department

Phone: 203-466-5280 x328
Phone: 203-466-5280 x346
Phone: 203-946-6379

BACKGROUND

Previous CPC Actions:
None.

Zoning:
Not applicable.

Site description/existing conditions:

The project site is within the Fair Haven Heights neighborhood of the City, extending 2,400 feet underneath Quinnipiac Avenue between Aner Street and Welcome Street. The surrounding neighborhood is primarily residential.

Proposed activity:

The project is part of a series of projects that aim to reduce the combined sewer overflow to the West River and New Haven Harbor from an estimated 32 million gallons (MG)/year in 2016 to 19 MG/year. This project will rehabilitate the existing sewer in Quinnipiac Avenue. The project will line the existing 24-inch-diameter pipe generally between Aner Street and Runo Terrace. The lining work will require minimal excavations at the manholes and will require bypass pumps and piping to temporarily redirect the flows around the sections being lined. Approximately 100 linear feet of the existing pipe north of Clifton Street will be replaced and a new structure added. The replacement portion will also require bypass pumping during the time the contractor is working in the trench.

The existing sewer is between a fuel lined owned by Buckeye Pipelines and a gas main owned by Southern Connecticut Gas Company. The existing gas main conflicts with the replacement section of sewer north of Clifton Street. It must be relocated prior to replacing the existing sewer pipe. Once the piping has been lined and the section replaced, the overflow pipe between the sewer and storm drain at Regulator 020 will be closed with masonry and flow filled, eliminating Regulator 020. The storm drain in Clifton Street will continue to carry storm drainage to the Quinnipiac River.

Motor vehicle circulation/parking/traffic:

Detours will be necessary during construction. The applicant is evaluating possible detour routes, which must be approved by the Transportation, Traffic, and Parking (TTP) Department prior to sign-off for permits.

Bicycle parking:

Not applicable.

Trash removal:

Not applicable.

Signage:

Final determination of traffic markings, V-log locations, signs, and traffic controls on site and on the perimeter of the site will be subject to the approval of the Department of Transportation, Traffic, and Parking.

Sec. 58 Soil Erosion and Sedimentation Control

- ☒ **Class A** (minimal impact)
☐ **Class B** (significant impact)
☐ **Class C** (significant public effect, hearing required)

Cubic Yards (cy) of soil to be moved, removed or added: 269 CY

Responsible Party for Site Monitoring: Luigi DiMonaco of GNHWPCA

This individual is responsible for monitoring the site to assure there is no soil or runoff entering City catch basins or the storm sewer system. Other responsibilities include:

- monitoring soil erosion and sediment control measures on a daily basis;
- assuring there is no dust gravitation off site by controlling dust generated by vehicles and equipment and by soil stockpiles during both the demolition and construction phases;
- determining the appropriate response, should unforeseen erosion or sedimentation problems arise; and
- ensuring that SESC measures are properly installed, maintained and inspected according to the SESC Plan.

Should soil erosion problems develop (either by wind or water) following issuance of permits for site work, the named party is responsible for notifying the City Engineer within twenty-four hours of any such situation with a plan for immediate corrective action.

All SESC measures are required to be designed and constructed in accordance with the latest Standards and Specifications of the *Connecticut Guidelines for Soil Erosion and Sediment Control*.

Sec. 60 Stormwater Management Plan:

Although the project is located in the coastal management area, because the project is a stormwater improvement demonstration of compliance with Section 60 standards is not necessary.

Sec. 60.1 Exterior Lighting: Not applicable.

Sec. 60.2 Reflective Heat Impact: Not applicable.

Project Timetable:

Construction is expected to begin sometime in 2018. The lining portion of the project should take less than one month. Relocation of the gas piping will take approximately one month, and relocation of the gas services another two months. Replacement of the sewer pipe will take less than three months to complete.

SITE PLAN REVIEW

Plans have been reviewed by the Site Plan Review team with representatives from the Departments of City Plan, City Engineer, Building, Disabilities Services and Transportation, Traffic and Parking and have been found to meet the requirements of City ordinances, Regulations, and standard details.

COASTAL SITE PLAN REVIEW

Exempt under Section 55(f)(3) of the New Haven Zoning Ordinance.

ACTION

The City Plan Commission approves the submitted Site Plans subject to conditions on Page 1.

ADOPTED: July 19, 2017
Edward Mattison
Chair

ATTEST:
Karyn M. Gilvarg, AIA
Executive Director

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

WAGE RATES

(State of Connecticut Wage Rates apply to this Project) (The
higher of the CT State or Federal Wage Rates apply)

(To Be Inserted as Addendum 1)

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

ITEMIZED PROPOSAL FOR CONSTRUCTING

**NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY**

PROJECT: CWF 2016-02

Closing Regulators 012 & 020

**Nicoll Street \ Mitchell Drive
Quinnipiac Avenue
New Haven, Connecticut**

The Contractor shall fully complete the work stipulated in the Contract Documents within One hundred and eighty four (184) consecutive calendar days following Notice to Proceed. The date for completion will be calculated from a date ten (10) days following the date of the Engineer's written notice to proceed.

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

To Whom it May Concern,

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

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

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

The undersigned further agrees to accept the aforesaid unit bid prices in compensation for any additions or deductions caused by any variation in quantities due to more accurate measurement, or by any changes or alterations in the Plans or Specifications of the Work and for use in the computation of the value of the Work performed for monthly estimates.

The Bidder is required to calculate the value of the various bid items on the basis of reasonable labor, material, equipment, pro rata profit and pro rata overhead costs to perform the work described in the Contract Documents. An "unbalanced bid" is one containing lump sum or unit bid items, which do not reflect reasonable actual costs plus a reasonable proportionate share of the Bidder's anticipated profit, overhead costs, and other indirect costs, which he/she anticipates for the performance of the items in question. Prior to award of bids, the Authority may request a Schedule of Values for any or all item(s) reflected on the Bid Proposal for the purpose of determining an "unbalanced bid". The analysis shall be conducted by the Authority. The Bidder understands, by signing this Bid, that the Authority may REJECT any bid that has unit prices, which are, in the opinion of the Engineer, obviously unbalanced.

Every Proposal must be accompanied by a certified check or bank cashier's check or bid bond payable to the Greater New Haven Water Pollution Control Authority in the amount of ten percent (10%) of the bid.

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

- A. When Work is required in which no specific payment item is listed on the Proposal Form, the cost of such Work shall be included in the unit prices bid.
- B. All unit prices, lump sums, etc. listed in the bid Proposal are firm and not subject to change for One Hundred and Twenty (120) from the day bids are opened.
- C. Within ten (10) days from the date of a notice of acceptance of this Proposal, the undersigned agrees to execute the Contract and to furnish to the Authority a satisfactory "Faithful Performance Bond" and "Labor and Material Payment Bond" in the amount of one hundred percent (100%) of the Contract price.
- D. Time is of the Essence. All Work to be performed under the Contract shall be completed within the time stated in the Agreement for the Project or within such extended time for completion as may be granted by the Authority.
- E. As a condition of the Contract Award, the successful Bidder shall provide proof, from the Connecticut Secretary of State's office, of its current authorization to do business in Connecticut. All Connecticut corporations must provide a Certificate of Good Standing from the Secretary of State's Office. All foreign (out of State) corporations shall provide a valid license to do business in Connecticut, in the form of a current Certificate of Authority from the Secretary of State's office and evidence of compliance with the bond requirements of the Connecticut Department of Revenue Services. These documents must be presented within thirty (30) days from the date of bid opening.

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

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

COMPANY NAME (BIDDER): _____

Address of Bidder: _____

Phone Number: Area Code (_____) _____

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

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

Names and Addresses of Members of the Firm:

(Corporate Seal)

Schedule of Bid Items

The quantities specified are approximate only as determined by the Engineer. They are included to provide the Bidder with an estimate of the materials required to complete the project and to provide a uniform basis for the comparison of bids. The Authority reserves the right to REJECT any proposal in which any of the bid prices are significantly unbalanced to the potential detriment of the Authority. **The Contractor shall be required to submit a Schedule of Values for all Lump Sum Items prior to the start of construction.** The bid quantities shown with an asterisk (*) under the "Estimated Quantity" are not based upon an exact measurement of work shown on the plans, but are based upon a judgment of the work that may be required and are intended to obtain a reasonable bid price for potential work to allow for payment during construction if needed. The Authority shall reserve the right to increase or decrease the actual quantities required, or to delete them entirely, at the time the Contract is awarded, or at any time thereafter, without prejudice towards the quoted bid price per unit, if to do so is in the Authority's best interest.

Refer to 102-16 Special Specification and Notes for modifications to specifications.

Item No.	Spec. Reference	Est. Quantity	Unit	Item Description with Unit or Lump Sum Price Written in Words	Unit Bid Price	Amount in dollars
1	205.01	267	CY	Trench Excavation - Earth _____ dollars and _____ cents		
2	205.02	100	CY	Trench Excavation - Rock _____ dollars and _____ cents		
3	205.03	5	EA	Test Pit by Vacuum Method, Complete _____ dollars and _____ cents		
4	210	1	LS	Temporary Soil Erosion and Water Pollution Control _____ dollars and _____ cents		
5	305	100	CY	Bedding Material - 3/4" Crushed Stone _____ dollars and _____ cents		
6	405	884	SY	2" Hot Mix Asphalt (HMA) Superpave 0.5 Mill and Overlay (Alternate Bid) _____ dollars and _____ cents		
7	407.01	796	SY	Temporary Pavement Repair - Roadways / Driveways 2" Class 2 _____ dollars and _____ cents		
8	407.02	395	SY	Permanent Trench Repair 1-1/2" Bituminous concrete class 2 _____ dollars and _____ cents		

9	407.03	395	SY	Permanent Trench Repair 1-1/2" Bituminous concrete class 1 _____.dollars and _____.cents		
10	407.04	395	SY	Permanent Trench Repair 6" Bituminous concrete class 4 _____.dollars and _____.cents		
11	512.01	100	LF	Sanitary Sewer 24" PVC _____.dollars and _____.cents		
12	518.01	2550	LF	Sanitary Sewer Hydraulic Cleaning (Light) 24" RCP _____.dollars and _____.cents		
13	518.02	480	LF	Sanitary Sewer Hydraulic Cleaning (Light) 48" Brick _____.dollars and _____.cents		
14	518.03	485	LF	Sanitary Sewer Hydraulic Cleaning (Light) 35" x 52" Brick _____.dollars and _____.cents		
15	518.04	2	Per Location	Debris / Obstruction Removal _____.dollars and _____.cents		
16	520.01	2450	LF	24" RCP Sanitary Sewer CIPP Lining _____.dollars and _____.cents		
17	520.02	480	LF	48" Brick Sanitary Sewer CIPP Lining _____.dollars and _____.cents		
18	520.03	485	LF	35" x 52" Brick Sanitary Sewer CIPP Lining _____.dollars and _____.cents		
19	520.10	75	EACH	Re-establish House Service Connection _____.dollars and _____.cents		
20	520.11	99	EACH	Cut Protruding (Clay/Plastic) Taps _____.dollars and _____.cents		

NOT FOR BIDDING PURPOSES
 REFERENCE COPY ONLY

21	522.01	5100	LF	Sanitary Sewer CCTV Inspection 24" RCP _____.dollars and _____.cents		
22	522.02	960	LF	Sanitary Sewer CCTV Inspection 48" Brick _____.dollars and _____.cents		
23	522.03	970	LF	Sanitary Sewer CCTV Inspection 35" x 52" Brick _____.dollars and _____.cents		
24	523.01	12	VF	Reconstruct Sanitary Sewer Manhole _____.dollars and _____.cents		
25	523.03	12	VF	5' Diameter Drop Manhole _____.dollars and _____.cents		
26	524.02	192	VF	Sanitary Sewer Manhole Rehabilitation spray on Cementitious liner with epoxy coating Upto 5' diameter manhole _____.dollars and _____.cents		
27	524.02	72	VF	Sanitary Sewer Manhole Rehabilitation spray on Cementitious liner with epoxy coating greater than 5' diameter manhole _____.dollars and _____.cents		
28	927	427	SF	Driveway Restoration _____.dollars and _____.cents		
29	945	346	SY	Fertilizing, Seeding and Mulching _____.dollars and _____.cents		
30	971	1	LS	Maintenance and Protection of Traffic _____.dollars and _____.cents		
31	975	1	LS	Mobilization (Not to exceed 3% of total price excluding mobilization) _____.dollars and _____.cents		
32	985	1	LS	Project Survey and Stakeout _____.dollars and _____.cents		

33	1111	140	LF	Sawcut for Loop Detector _____.dollars and _____.cents		
34	1208.1	13	SF	Sign Face - Sheet Aluminum _____.dollars and _____.cents		
35	1208.2	13	SF	Temporary Signage (Building) _____.dollars and _____.cents		
36	1208.3	13	SF	Temporary Signage (Miscellaneous) _____.dollars and _____.cents		
37	1209.01	1225	LF	Temporary Pavement Markings (Fast-drying Paint), 4" or 12" wide _____.dollars and _____.cents		
38	1209.02	428	LF	Temporary Pavement Markings (Fast-drying Paint), symbols, Legends _____.dollars and _____.cents		
39	1209.03	631	SF	Power Washing for Removal of Paint Marks from Concrete/Brick _____.dollars and _____.cents		
40	1210.01	550	LF	Pavement Markings (Epoxy Resin), 4" Wide, Yellow or white _____.dollars and _____.cents		
41	1210.02	675	LF	Pavement Markings (Epoxy Resin), 12" Wide, Yellow or white _____.dollars and _____.cents		
42	1210.03	425	LF	Pavement Markings (Epoxy Resin), Symbols, Legends _____.dollars and _____.cents		
43	1500	1	ALLOWANCE	Uniformed Police Officers _____.dollars and _____.cents		
44	1506.01	58	LF	Abandoning Pipe in Place _____.dollars and _____.cents		

45	1508.01	8	CY	Controlled Low Strength Material (Pumped) ____dollars and ____cents		
46	1510.01	1	EA	Alter Existing Manhole, Catch Basin Or Drop Inlet ____dollars and ____cents		
47	1514	240	HR	Uniformed Trafficman Flagger ____dollars and ____cents		
48	1620	2	EA	Observation well Decommissioning ____dollars and ____cents		
49	109-15	1	LS	Maintenance Bond ____dollars and ____cents		

NOT FOR BIDDING PURPOSES
 REFERENCE COPY ONLY

SUM TOTAL OF ALL
 ESTIMATED QUANTITIES,
 UNIT PRICES BID AND
 EXTENDED TOTALS =

\$_____.

TOTAL SUM IN WORDS:

\$ _____ Dollars

and _____ Cents

Signature of Bidder: _____ Dated: _____

Printed Name _____

Name of Firm _____

In submitting this Bid, the Bidder understands that the Authority reserves the right to reject any and all bids, or to waive any informality in the submitted bid documents.

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

Corporate Seal

Schedule of Bid Items

Bidder's Checklist (See Paragraph 35 of the Special Specifications and Notes)

At a minimum, each bidder shall ensure that their complete bid proposal includes the following documents:

- a. Itemized Bid Proposal
- b. Bid Security / Bond
- c. Bidder's Statement of Qualifications Form
- d. MBE/WBE Subcontractor Certification and Verification Form: See Par. 40 of the Special Specifications and Notes. (Clean Water Fund Memorandum Dated May 25, 2016)
- e. DAS Certification: See Paragraph 36 of the Special Specifications and Notes. (DAS Update Bid Statement)
- f. American Iron and Steel Provisions – Bidder Certification Form

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

NOT FOR REFERENCE

INSERT BID SECURITY BID BOND HERE

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

STATEMENT OF BIDDER'S QUALIFICATIONS

(To be submitted by the Bidder with the Bid)

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary questions may be answered on separate attached sheets. The Bidder may submit any additional information it desires.

1. Name of Bidder: _____
2. Bidder's Tax Identification Number: _____
3. Permanent Main Office Address: _____

4. When Organized: _____
5. If a Corporation, Where Incorporated: _____
6. How many years have you been engaged in construction under your present firm or trade name:

7. Contracts on hand: (Schedule these, showing gross amount of each Contract and the appropriate anticipated dates of completion)

8. General character of work performed by you:

9. Have you ever failed to complete any work awarded to you? If so, where and why:

10. have you ever defaulted on a Contract? If so, where and why.

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

11. List the more important contracts recently completed by you, stating approximate gross cost for each, and the month and the year completed.

12. List your major equipment available for this Contract.

13. Experience in work similar in importance to this project.

14. Background and experience of the principal members of your organization, including the officers.

15. Give Bank reference.

16. Will you upon request, fill out a detailed financial statement and furnish any other information that may be required by the Greater New Haven Water Pollution Control Authority.

Yes ___ No ___

17. The undersigned hereby authorizes and requests any persons, firm, or corporation to furnish any information requested by the Greater New Haven Water Pollution Control Authority in verification of the recitals comprising this statement of the Bidder's qualifications.

Dated at _____ this _____ day of _____ 200__.

(Name of Bidder)

By: _____

Title: _____

State of _____)

) SS

County of _____)

_____ being duly sworn,

deposes and says that he/she is _____

_____ of _____ and that

he/she answers to the foregoing questions and all statements therein are true and correct.

Subscribed and sworn to before me this _____ day of _____ 200__.

(Notary Public)

My Commission Expires: _____

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY



Clean Water Fund Memorandum (2016-003)

**Disadvantaged Business Enterprise (DBE) Subcontractor Participation on Clean Water Fund
(CWF) Construction Projects**

I. PURPOSE

The municipality, through its Prime Contractor must make specified good faith efforts to attain the DBE goals as specified in this document in Section III. This is an administrative condition of the U.S. Environmental Protection Agency (EPA) Grant which funds Clean Water Fund Projects.

This memorandum supersedes the Clean Water Fund Memorandum Dated June 24, 2014

II. GOVERNING STATUTE OR REGULATION

General Compliance (Federal), 40 CFR, Part 33: The municipality, through its Prime Contractor must comply with the requirements of EPA's Program for Utilization of Small, Minority, and Women's Business Enterprises (MBE/WBE).

III. EPA REQUIREMENTS

The following clause shall be included in all construction contract documents for goods and services to be funded under the CWF:

The requirement for DBE subcontractor participation, expressed as a percentage of the total eligible contract amount, shall be a minimum of 8.0 percent with the following makeup:

MBE 3.0 percent WBE 5.0 percent

Failure to meet or exceed the required percentage or submit acceptable documentation of the six good faith efforts may render a bid non-responsive and may cause the bid to be rejected.

IV. CERTIFICATION

A DBE must be certified at the time that the subcontract for their services is executed. A business that is pending new certification, recertification, or whose certification has expired cannot be counted toward the goals.

In the case where a subcontractor DBE is certified as both a MBE and a WBE:

1. The prime contractor may count the entire value of the subcontract as either a MBE or a WBE.
2. The prime contractor may choose to split the subcontract between the MBE and the WBE categories to fulfill both goals. If the prime contractor chooses this route:
 - a. They must indicate the dollars to be apportioned to the categories either on the face of the copy of the fully executed subcontract submitted to the DEEP or by some other written method.

- b. The certification submitted to DEEP must indicate that the principal of the subcontractor is both a woman and a minority.
- c. For a certification that only identifies the subcontractor as a DBE, additional documentation is required as proof of dual status. In the case of ConnDOT, the detailed information page within their online database suffices as proof.

V. THE SIX GOOD FAITH EFFORTS AS SPECIFICALLY DEFINED BY EPA

The Six Good Faith Efforts are required methods employed by all DEEP Clean Water Fund recipients to ensure that all DBEs have the opportunity to compete for procurements funded by DEEP financial assistance dollars.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
6. If the Prime Contractor awards subcontracts, require the Prime Contractor to take the above steps.

The Prime Contractor's certification as a DBE has no effect on this requirement. Therefore, if the Prime Contractor is a DBE, the Six Good Faith Efforts defined above must be employed in the procurement of subcontracts to be secured to achieve the MBE 3.0% and WBE 5.0% participation. Also, for subcontracts for material suppliers, only 25% of the dollar value of their contracts may be applied toward the required percentage listed above unless that supplier manufactures those supplies and/or adds specialized input to the process.

VI. ACCEPTABLE CERTIFICATION OPTIONS

1. **Connecticut Department of Administrative Services (DAS)** - DEEP will continue to accept DAS certification until such time as other State entities are identified whose certification processes meet the EPA criteria. DAS will only certify Connecticut based firms that meet the criteria under CGS 4a-60g.
2. **Connecticut Department of Transportation (ConnDOT)** - Companies that desire to do business with ConnDOT as well as the DEEP should seek ConnDOT certification which will be accepted by the DEEP. DBE firms are advised that the certification process can take 90 days to complete. ConnDOT will certify both in state as well as out of state firms.

3. **The Environmental Protection Agency (EPA)** – In the event an entity cannot be certified by ConnDOT as a DBE, that entity should seek certification with EPA. Such entities must provide EPA with evidence from ConnDOT denying certification.
4. **Small Business Administration (SBA-Federal)**-SBA certification is available to companies under the Woman Owned Small Business (WOSB) program and the SBA 8(a) Business Development Program (www.sba.gov/8abd/) which has a net worth ceiling of \$250,000 for initial applicants.
5. **Other states certification**- Prime Contractors and Engineering Consultants may utilize certification from other states. Such certification must specify the DBE designation. Where there is no DBE certification option within a state, the instance must be presented to the DEEP Financial Administrator assigned to the project for consideration on a per case basis.

VII. DBE COMPLIANCE PROCESS

Within fourteen (14) calendar days after bid opening the apparent low bidder shall complete and submit to the municipality the Subcontractor Verification Form provided in the contract documents along with corresponding DBE certification for each subcontractor. The municipality must then submit copies as part of the bid application to DEEP as demonstration of compliance with this memorandum. **Failure to submit these documents by the close of business of the fourteenth calendar day after bid opening may result in the bid being deemed non-responsive and may cause the bid to be rejected.** Two executed copies of the DBE subcontracts must be submitted to the municipality, who must then submit one copy to the DEEP Financial Administrator as demonstration of compliance with this memorandum.

No payment requests will be processed by DEEP until the executed copies of the subcontracts are on file in the DEEP office.

It is understood that the Prime Contractor must make and document the good faith efforts as defined above. Should the contractor not meet the goals, documentation of good faith efforts will be required to be submitted to the DEEP Municipal Facilities Engineer for consideration that the good faith effort was extensive enough to warrant the acceptance of a lower goal for the specific contract in question.

The prime contractor is required to employ the six good faith efforts in that the DBE percentages shall be maintained or exceeded in the event of one subcontractor being substituted for another.

I hereby verify that I have read and understand the DBE requirements in this memorandum and will procure subcontracts whose percentages will meet or exceed the minimums listed above.

Contract Name _____

Prime Contractor Company Name _____

Prime Contractor Authorized Signature _____ Date _____

VIII. DEFINITIONS

CGS: Connecticut General Statutes

ConnDOT: Connecticut Department of Transportation

CWF: Clean Water Fund

DAS: Connecticut Department of Administrative Services

DBE: Disadvantaged Business Enterprise

DEEP: Department of Energy and Environmental Protection

EPA: Environmental Protection Agency (Federal)

MBE: Minority Business Enterprise

SBA: Small Business Administration (Federal)

WBE: Woman Business Enterprise

WOSB: Woman Owned Small Business (Federal program - SBA)

May 25, 2016

Date

Denise Ruzicka

Denise Ruzicka, Director
Planning and Standards Division
Bureau of Water Protection and Land Reuse

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY



Disadvantage Business Enterprise (DBE)

Subcontractor Verification Form

Prime Contractor Company Name: _____

Contract Name/Number: _____

Contract Award Amount: \$ _____

Note to general contractor: You are required to complete this form listing each DBE (MBE or WBE) subcontractor to be employed in work eligible for the Clean Water Fund within the table below. Please submit an original of this completed form, along with each subcontractor's current, valid DBE certificate, to the municipality within 14 days of bid opening. In the event that this form is not submitted with the bid application, the bid could be rendered nonresponsive and rejected.

Subcontractor Name	Address/Phone/E-mail	Name of Contact	Dollar Amount* (25% for Suppliers)	MBE %	WBE %
Totals:					

**Supplier is defined as follows: A supplier is a business which acts as a distributor of materials or equipment and which provides a commercially useful function when such activity is traditional in the industry manufacturing the material or equipment supplied. Suppliers will receive 25% credit for providing supplies and receive 100% for manufacturing or fabrication of supply items. Haulers will receive 100% credit if they provide the material that is hauled. Commercially useful function will normally include:*

- 1. Providing Technical Assistance to the purchaser prior to the purchase, during installation and after the supplies or equipment are placed in service;*
- 2. Manufacturing or being first tier below manufacturer of the supplies or equipment supplied;*
- 3. Providing Functions other than just accepting and referring request for supplies or equipment to another party for direct shipment to a contractor.*

The completion and submission of this form does not constitute a contractual agreement between the general contractor and the named subcontractor, but is solely for documenting proposed compliance with DBE participation under the Department of Energy and Environmental Protection's (DEEP) Clean Water Fund (CWF). Should another subcontractor be substituted in place of any firm named above, both the municipality and the DEEP (Clean Water Fund Unit, 79 Elm Street, Hartford 06106-5127) should be notified in writing within three (3) business days of the change. This form must be updated for each instance in which a subcontractor is replaced or added. The DBE percentages shall be maintained or exceeded in the event of one subcontractor being substituted for another.

Prime Contractor Authorized Signature: _____ Date: _____

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

6
INSERT
STATE OF CONNECTICUT
DAS PREQUALIFICATION CERTIFICATE
AND
UPDATE BID STATEMENT
HERE

NOT FOR BID
REFERENCE

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

American Iron and Steel Provisions - Bidder Certification

The Bidder ("Contractor") acknowledges to and for the benefit of the Greater New Haven Water Pollution Control Authority ("Purchaser") and the State of Connecticut ("State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure, including without limitation any impairment or loss of funding, whether in whole or in part from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Please Print

Bidder (Contractor):

By:

Name of Contractor (Company)

Signature

Address

Print Name

City/State/Zip Code

Date