PROJECT: **CWF 2012-04** **Yale Campus/Trumbull Street Area Sewer Separation Project: Phase 2**

Pearl Street/ Lincoln Street/ Bradley Street/ Whitney Avenue/ Sachem Street/ Green Infrastructure at Various Locations,

New Haven, Connecticut

BID OPENING: **10:00 AM Local Time on Tuesday, July 12, 2022**

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

BID DOCUMENTS

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Greater New Haven Water Pollution Control Authority

INVITATION
FOR CONSTRUCTING

PROJECT: CWF 2012-04

Yale Campus/Trumbull Street Area Sewer Separation Project: Phase 2 Pearl Street / Lincoln Street / Bradley Street / Whitney Avenue / Sachem Street / Green Infrastructure at Various Locations 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 2012-04, Yale Campus/Trumbull Street Area Sewer Separation Project: Phase 2: Pearl Street / Lincoln Street / Bradley Street / Whitney Avenue / Sachem Street / Green Infrastructure at Various Locations, New Haven, Connecticut** until **10:00 AM Local Time on July 12, 2022** at which time and place said bids will be opened publicly via video conference and read aloud.

This project consists of the installation of approximately 6,050 linear feet of 15" to 42" RCP storm sewers, 320 linear feet of 12" PVC sanitary sewers and PVC laterals utilizing open cut excavation, storm and sanitary sewer manholes, and other appurtenances, and surface restoration. The project also includes the installation of green infrastructure components including 22 bioswales, 45 infiltrating catch basins, and 7 bump-out bioswales at various locations.

The Contractor shall fully complete the work stipulated in the Contract Documents within FOUR HUNDRED EIGHTY-FIVE (485) 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.

The Information for Bidders, Proposal, Form of Contract, Plans and Specifications will be available on **Friday, June 10, 2022** 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 – Fifty Dollars ($150.00). 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 2017,** 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 potion 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 via video conference at 11:00 AM Local Time on Thursday, June 16, 2022, to be hosted by the Greater New Haven Water Pollution Control Authority – Engineering Department. All potential bidders who have purchased the bid package will receive an email in advance with additional Pre-Bid Conference instructions.

The deadline for submitting questions is 12:00 noon on Friday June 24, 2022. Questions shall be submitted by email to engineering@gnhwpca.com AND engineering@teamdtc.com.

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 CTDEEP is 3% of the total Contract price for MBE's and 5% for WBE's.

Bidders are required to comply with the affirmative action / equal opportunity employment requirements of all contractors / subcontractors as noted in Governor's Executive Orders No. 3 and 17, included in the Project Manual.

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/contractors shall be responsible for obtaining the Federal Wage Rates. It is the responsibility of the bidder/contractor to request before opening to request, if necessary, any additional information on Federal and State Wage Rates for those tradespeople who are not covered by the applicable Federal and State Wage Determination but who may be employed for the proposed work under this contract.

Bidders are required to comply with the American Iron and Steel (AIS) requirements outlined in the final Environmental Protection Agency (EPA) guidance memorandum dated March 20, 2014, and CT DEEP Revised Clean Water Fund Memorandum (2014-001a) dated May 28, 2015.

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

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NOTICES TO CONTRACTOR

NOTICE TO CONTRACTOR - APPLICABILITY OF CONNECTICUT DOT - FORM 818

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818, 2020, with the latest Supplemental Specifications (otherwise referred to collectively as "ConnDOT Form 818" or Form 818) is hereby made part of this contract, as modified by the Special Provisions contained herein.

ALL REFERENCES TO “FORM 817” SHALL MEAN “FORM 818”.

All reference to the “State”, “Department” and “Commissioner” shall mean the “GNHWPCA”. All reference to the “Engineer” shall mean the “GNHWPCA” and its representative”.

The GNHWPCA shall have the sole and absolute discretion to determine whether any provision of Form 818 shall be applied with respect to any issue which may arise between the parties.

Additionally, where there is a conflict between the terms and conditions set forth in the GNHWPCA’s bid specifications and those set forth in Form 818, the GNHWPCA’s bid specifications shall prevail.

NOTICE TO CONTRACTOR – OLD COMBINED SEWERS

The Contractor is hereby notified that there is an existing brick combined sewer in Pearl Street. Extreme care must be exercised when working near this structure. Open cut excavation shall be minimized to the maximum extent possible near this structure. During all operations in the vicinity of the brick sewer, the Contractor shall take any necessary precautions to reduce soil movement or vibration that could damage the sewer. It shall be the Contractor’s responsibility to protect and safeguard this structure and repair any damage caused by his operations. All excavation near this structure shall be continuously supported by the use of a non-impact excavation support system, such as a slide rail trench support system or approved equal. Vibrating or driving of sheeting will not be allowed. Should a soldier pile support system be proposed, the Contractor shall pre-drill or use vacuum excavation to excavate for the installation of the piles. The use of a Hoe-Pac compactor or vibratory roller will not be allowed in trenches on Pearl Street and as directed by the Engineer. A closed-circuit television inspection of the brick sewer was performed in 2013.

In Addition, there are other smaller combined sewers on the side streets within the project area that are constructed of clay pipe and that will be sensitive to vibration. Therefore, the use of Hoe-Pac or vibratory roller compaction within trenches on these side streets will not be allowed. However, vibratory roller compaction for pavement installation on these side streets will be allowed.

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

NOTICE TO CONTRACTOR – SUPPORT OF UTILITIES

The Contractor is advised that the work is adjacent to aged utilities and the work will involve trenching adjacent to or cross these aged utilities. The Contractor shall retain a Professional Engineer, licensed in Connecticut, (Contractor’s Engineer) who is familiar with work adjacent to utilities to design the supports and trenching methods to be used adjacent to utilities. The Contractor’s Engineer’s design must be submitted to and approved by the adjacent utility owner prior to work near the utility. The design must include the trench support method to be used that will not create voids below the existing utilities. The

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Contractor's Engineer shall make field investigations weekly and when a new utility support system is being used. The Contractor's Engineer shall promptly file a report of Field Visit with the Utility Owner and the Authority.

NOTICE TO CONTRACTOR - 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.

Measurement and payment for the support of utility poles will be per each and the price bid shall include coordination with the utility owner, the design of the support system, placing and removing the support system as many times as required to perform the proposed work, maintaining pedestrian access, and all equipment, labor, tools and materials necessary to support each pole to the satisfaction of the owner and the Engineer. The Contractor will be paid one time for the support of only those utility poles, which must be supported by bracing, guy wires, or supported by the Utility Company and charged to the Contractor regardless of the number of times support is required.

The Contractor must retain the services of a Professional Engineer registered in the State of Connecticut to design a support system to be used for the utility poles when excavating near them. The support system must be approved by the United Illuminating Company, Frontier and/or the City of New Haven and pedestrian access must be maintained on the sidewalk during its use.

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.

NOTICE TO CONTRACTOR - WATER MAIN

The Contractor is hereby notified that there is an existing 36" cast iron water main in Pearl Street, Whitney Avenue, and Sachem Street, which was constructed in the 1920's. Extreme care must be exercised when working near this water main, including, but not limited to, installing storm sewers and sanitary sewers above or below the water main by open cut excavation. During excavation near, or adjacent to, this water main, the water main and trench excavation shall be continuously supported by a support system designed by a Professional Engineer licensed in the State of Connecticut.

NOTICE TO *CONTRACTOR - COMMUNICATIONS CABLES*

The Contractor is hereby notified that there is an important Telephone Communications Conduit in Whitney Avenue and Orange Street. Extreme care must be exercised when working near these and all other communications conduits, including, but not limited to, installing storm sewers and sanitary sewers above or below the conduits by open cut excavation. All excavation near this duct bank structure shall be continuously supported. The Contractor will be required to retain a Professional Engineer licensed in the State of Connecticut to design a system for the support and protection of the communications conduits and for the support system for the required trench excavation.

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NOTICE TO *CONTRACTOR - MAINTENANCE OF FLOW*

The Contractor is hereby notified that he is responsible for maintaining flows in the mainline and lateral storm sewers, sanitary sewers and combined sewer mains and laterals at all times during construction. The Contractor shall be aware that the existing sewers within the project limits are combined sewers and that most sanitary laterals are combined and contain roof leader and or parking lot drainage. It is anticipated that the Contractor will schedule any new connection, lateral work or reconstruction work on the brick and combined sewers during dry weather flow periods when bypass flows will be minimal. It is recommended that construction work and flow bypassing not be attempted during wet weather flow periods or when significant rainfall will occur during the actual construction. The Contractor shall be aware that the combined sewers are subject to surcharging during significant rainfalls and that existing sanitary sewer laterals are combined and may contain roof leader and parking lot drainage within the Project limits.

The Contractor shall be aware that this Contract work will require coordination of work efforts during replacement of existing catch basins, so that the street drainage systems are *out* of service the minimal time necessary. The Contractor shall schedule the work to maintain existing drainage connections to the combined sewer as long as possible. Temporary catch basin connections to new or existing sanitary manholes shall be made when possible and necessary to avoid long periods of no street drainage. In all cases, 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 next downstream catch basin when an existing catch basin is being replaced. 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.

NOTICE TO *CONTRACTOR - CARE OF TREES*

Protection of the existing trees to remain during construction is of the utmost importance to the GNHWPCA, the City of New Haven and the public. The Contractor shall employ the services of a Connecticut licensed Contract Arborist to oversee the construction in accordance with the Tree Preservation Special Technical Specification (No. 1513).

Special precautions and safeguards must be implemented by the Contractor when working near trees and their root systems.

Refer to the Standard Specifications, Appendix *"C"* and the Special Specifications and Notes for additional information.

NOTICE TO CONTRACTOR – PROJECT COORDINATION/SCHEDULING/STORAGE

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

1 The Contractor shall be required to coordinate with local businesses, property owners/tenants and utility companies throughout the Contract period at no additional compensation.

2 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).

3 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.

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4 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.

5 The Contractor shall confine all operations involving jackhammers to daytime periods.

NOTICE TO CONTRACTOR – ACCESS

The Contractor shall be required to perform the construction in a manner that will maintain, throughout the construction period, access to existing businesses within the Project limits, traffic flows of vehicular, bicycle and pedestrian traffic. The Construction Area contains high volumes of both pedestrian and bicycle traffic in addition to vehicular traffic. The Contractor shall provide for safe passage of pedestrians and bicycles around the work site and shall provide barriers to keep them out of the active work area.In addition, the Contractor shall schedule and coordinate the construction operations to accommodate temporary work shutdowns, or limited construction activity, in order to maintain access for designated holiday and special Yale University or City events.

NOTES

1. Description of Work

This project is a combined sewer separation that proposes to install new separate storm and sanitary sewers, to reuse the existing combined sewer as a sanitary sewer, and to upgrade and improve the existing drainage collection system. The work area includes Pearl Street from State Street to Lincoln Street, Lincoln Street from Pearl Street to Trumbull Street, Bradley Street from Orange Street to Whitney Avenue, Whitney Avenue from Trumbull Street to Humphrey Street, and Sachem Street from Whitney Avenue to Hillhouse Avenue.

This project consists of the installation of approximately 6,050 linear feet of 15" to 42" RCP storm sewers, 320 linear feet of 12" PVC sanitary sewers and PVC laterals utilizing open cut excavation, storm and sanitary sewer manholes, and other appurtenances, and surface restoration. The project also includes the installation of green infrastructure components including 22 bioswales, 45 infiltrating catch basins, and 7 pump-out bioswales at various locations.

It is important for the Contractor to understand that this project presents special concerns with maintaining and bypassing existing combined sewer flows **(both in main sewer lines and in individual service laterals)** during the construction. In addition, bypassing in main sewer lines for connection of new pipes and the construction of manholes 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 are combined and 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.

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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 four hundred eighty-five (485) 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 TWO THOUSAND DOLLARS AND NO CENTS ($2,000.00) 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 via video conference at 11:00 AM on Thursday, June 16, 2022, to be hosted by the GNHWPCA – Engineering Department. 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, Mill River, 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

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respond immediately, the Authority may proceed with corrective work and deduct whatever costs are incurred from future payments to the Contractor.

9. Engineer's Field Office

The Contractor shall provide the following computer related equipment for the Field Office:

1. A USB monitor of at least 22-inch class
2. A wireless Multi-Function (Print, Copy, Scan) device which utilizes color laser technology and is capable of printing/scanning 11"x 17", including 8 ½" x 11" and 11' x 17" paper as required.
3. The equipment & accessories to setup a wireless network and business class internet access.

The above computer related equipment shall remain the property of the Contractor upon the project's completion. All other requirements for the Construction Field Office stated in technical Specification 1599 shall remain in effect.

The Contractor shall obtain a temporary site for the construction field trailer (or suitable office space) within 1/4 mile of the Project Site for the duration of the Contract. Any cost for temporary use of public/private property for the site shall not be measured separately for payment, but the cost shall be included in the cost of the Field Trailer bid. Any local or state taxes assessed for the Engineer's Field Office shall be paid by the Contractor and included in the bid price.

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:

- Yale Peabody Museum Renovations on Whitney Avenue / Sachem Street
- Whitney Avenue Improvements

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

A Contractor lay down area for Phase 2 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.

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.

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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 restricted by the City of New Haven roadway Occupancy and Excavation Permits, and/or 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. Nightwork will be required for the following work:

Whitney Avenue (Between Bradley Street and Trumbull Street)

Intersection of Sachem Street and Whitney Avenue

“Night Work” hours shall generally occur from Sunday through Wednesday evenings starting sometime between 8:00 PM and 10:00 PM and ending at 6:00 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 for the Arts and Ideas:
4. Thanksgiving Day and the Friday after:
5. Christmas Eve and Christmas Day:
6. New Years Day:

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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. Steel plates and/or bridging shall be recessed level with the adjacent pavement or have a minimum of 18" wide hot mix asphalt (HMA) ramps surrounding the plates or bridging. The HMA and use of steel plates will not be measured for payment separately but shall be included in the unit cost for excavation. All areas must be clean of debris by the end of the permitted work period.

The Contractor is responsible for arranging for a location for the construction field office, construction trailers and for performing 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.

The location of the project is in an active urban area, comprised of numerous businesses, institutional establishments and residential establishments. These establishments depend upon access by pedestrians and vehicles to conduct their activities.

15. Water Use

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. Water from hydrants maybe available through RWA from April 1 through October 31. GNHWPCA, Local Fire Department and RWA will require bi-weekly meetings with the contractor to designate all available fire hydrants for use based on the Contractor's schedule. A $100,000.00 fine (deduct item) will be assessed to the Contractor for the use of fire hydrants not approved in the bi-weekly meeting with RWA, Local Fire Department, and GNHWPCA. The maximum allowable peak flow rate from any hydrant approved for use shall not exceed 180 gallons per minute.

Payments for water use and water related permits/fees shall be made by the Contractor.

Any equipment which is intended to store or transport water must be first inspected by the Cross Connections Department of the RWA. Contractor shall contact RWA to schedule an appointment. Once the equipment inspection has passed, a Field Inspection Report will be issued. Contractor shall 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

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upon its return to RWA at the completion of the project. The usage is deducted from the deposit, 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 maybe required. The Contractor shall obtain all necessary permits and notify the Fire Department daily the location of the approved hydrants being used for construction purposes.

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

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

16. 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.

17. Winter Construction

The Contractor shall not be permitted to perform work on this Contract, during the period of December 15th to April 1st without prior written approval of the Authority and the City of New Haven. Prior to December 15th, the Contractor shall backfill all open-cut excavations and shall place temporary or permanent hot bituminous pavement, as the case may be, over all backfilled areas. No sidewalk or handicap ramps shall be constructed during this winter shutdown period. If excavated areas within pavements must be temporarily sealed during the winter period, the use of "cold patch" or a "Hybrid Asphalt" (**Wespro,** QPR High Performance Repair, or equivalent) will not be allowed without the express approval of the City and the Engineer.

Should the Contractor be unable to complete all Contract work during the contracted project period because of unusual weather conditions, as determined by the Engineer, that may extend the shutdown period, the Contractor shall be granted a time extension only, but shall not receive any additional compensation. A time extension will not be granted due to the failure of the Contractor to pursue the work diligently prior to the mandated winter shutdown.

If directed by the Engineer, and if required by the City, the Contractor shall reopen streets to limited, or full, two-way traffic for the duration of the winter shutdown. If directed, the Contractor shall re-stripe the pavement surface to provide adequate pavement markings and street parking shall be restored to the extent possible. Parking meters shall be replaced in the restored parking areas when directed by the Engineer. No additional payment for reopening streets for winter shutdown will be allowed. The cost shall be included in the Maintenance and Protection of Traffic bid item. Contractor shall not move, remove or relocate parking meters themselves. City of New Haven Transportation, Traffic & Parking to relocate meters. Contractor to provide meter posts. There shall be no separate measurement or payment for the re-installation and/or removal of the parking meters. The cost shall be included in the "Maintenance and Protection of Traffic" lump sum bid item. The cost of temporary re-striping of the pavement surfaces will be paid under the applicable unit price bid.

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While the City of New Haven will perform normal snow removal within street right-of-way, the Contractor shall be aware that he/she may be required to remove excess snow to the curb line to provide for parking and the required traffic lanes through the construction area in accordance with the MP&T Plans. In addition, the Contractor shall ensure that all sidewalk areas throughout the construction limits have a minimum of 4-foot-wide pedestrian walkway cleared of snow. Due to limited storage space within the project limits, the Contractor shall assume the snow must be trucked off-site. The Contractor shall check with the New Haven Public Works Department for an approved location for excess snow dumping outside the project limits. There shall be no separate measurement or payment for this potential snow clearing work. The cost shall be included in other Contract pay items.

18. 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.

The 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.

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19. Call Before-You-Dig

The Contractor's attention is called to the fact that they are obligated, by State Law, to notify **Call Before-You-Dig** (cbyd.com or 811) 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:

AT&T
P.O. Box 1562
4 Hamilton Street 90
New Haven, CT

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

Comcast of CT
22 New Park Drive
Berlin, CT

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

United Illuminating Co.
180 Marsh Hill Road
Orange, CT

AT&T Fiber Optics
75 Pent Highway
Wallingford, CT

Yale University
Facilities Operations
Utilities Services
2 Whitney Avenue
New Haven, CT

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

Lightower Fiber
Networks, LLC
50 Birch Mountain Rd.
Bolton, Ct

20. 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, both underground and overhead. 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 overhead and underground utilities and utility poles 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, services and utility poles, prepared by an Engineer licensed in the State of

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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 including utility poles, if the utility company elects to perform this work. The contractor is responsible to support United Illuminating Co. utility poles. There will be separate payment for the protection and support of utility poles, but there will be no separate measurement and payment for the support of underground utilities. The cost shall be included in the Contract unit prices bid for the various items of work. The Contractor will be paid one time for the support of only those utility poles, which must be supported by bracing, guy wires, or supported by the Utility Company and charged to the contractor regardless of the number of times support is required. 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 cost of this work shall be included in the various Contract unit prices and no additional payment will be allowed to the Contractor.

Gas Mains shown throughout the project area have been relocated by the gas utility in advance of this project. The Contractor shall confirm actual locations of the gas mains and services through the Call before You Dig system. Test Pits may be required at crossings. The Contractor shall confirm replaced low pressure gas main has been abandoned and is prepared for removal.

21. Existing Utility Service Laterals

a) General

The respective utility company shall be responsible for the relaying, reconnection or replacement of all existing gas, electric, telephone, cable and water service laterals, which are disrupted in the course of completing the work, or in conflict with new storm or 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.

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c) Electric Service Laterals

The United Illuminating (U.I.) Company shall make all repairs to and/or replacements / relocations of electric service laterals. However, the Contractor is responsible for reporting damage to any lateral to the U.I. Company.

Should electric service to any building be disrupted, the Contractor shall work continuously with the electric 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 electric service laterals damaged by the contractor and performed by U.I. and charged to the Contractor or for Contract delays caused by the utility work.

d) Telephone Service Laterals

The appropriate telephone utility shall make repairs to and/or all replacements/relocations of telephone service laterals. However, the Contractor is responsible for reporting damage to any lateral to the utility.

Should telephone service to any building be disrupted, the Contractor shall work continuously with the utility 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 made to the Contractor for repair, relocation and/or replacement of telephone service laterals damaged by the Contractor and performed by the utility and charged to the Contractor or for Contract delays caused by the utility work.

e) Cable Television Laterals

The Comcast Cable Company shall make all repairs and/or replacements/relocations of cable television service laterals. However, the Contractor is responsible for reporting damage to any lateral to the Comcast Cable Television Company.

No additional payment will be made to the Contractor for repair, replacement and/or relocation of cable television service lateral damaged by the Contractor and charged to the Contractor by Comcast Cable or for Contract delays caused by the utility work.

f) 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. Should extended work hours be required to restore service, the Contractor shall immediately notify the City of New Haven and the Authority. If necessary, the Contractor shall provide temporary service as directed by the Engineer or the Water Authority.

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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.

22. New PVC Storm Laterals

New PVC storm laterals for future private inflow separation shall be installed as shown on the plans, or as directed by the Engineer, to provide service to individual properties. The size shall be 6-inches minimum, or as shown or directed, and shall be installed as detailed from the new storm pipe or catch basin to the curb line. The minimum slope shall be 1.0% and each lateral stub shall be sealed with a capped end and wood marker stake, or other mark, at the surface as directed by the Engineer. The contractor shall accurately provide coordinates to laterals on as-built drawings. The Contractor shall anticipate that some field adjustment of Private Inflow piping will be required. At this time, it is assumed that each new lateral will cross either over or under the other utilities.

23. 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.

24. 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.

The relocating or relaying of existing sanitary sewer services in conflict with the work will be paid at the Contract unit price for Sanitary Sewer Service Lateral.

25. Removal of Pavement and Existing Frames, Grates, Covers and Catch Basin Heads

The Contractor shall be aware that there are some areas of Whitney Avenue where concrete pavement is under the bituminous pavement. There will be no separate payment for bituminous concrete pavement removal. The cost for this work shall be included in the unit price bid for trench excavation or in applicable lump sum items. The removal of concrete pavement will be paid under the Item "Concrete Pavement Removal". Payment for this item will be based upon the actual square yard area of concrete pavement removed within the payment limits for trench excavation shown on

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the plans or details. Payment for this item will include saw cutting, removal and disposal of the concrete pavement for any thickness of concrete encountered.

All frames, grates, covers and catch basin heads that are to be removed because of abandonment and/or replacement of existing manholes or catch basins, 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. The cost of this work shall be included in other bid items.

26. Surplus and Rejected Excavated Material

It is intended that suitable or select excavated material be used to backfill all excavations unless otherwise noted in the details or directed by the Engineer. The Contract Bid Proposal does contain a bid item for "Gravel Fill"; however, it is only to be used at the discretion of the Engineer for special circumstances, such as replacing unsuitable 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.

27. 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 the two (2) Unit Price Pay Items (Water for Dust Control and Calcium Chloride for Dust Control) included in the Contract.

28. 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 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 the price bid per day for "Mechanical Street Sweeping".

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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.

29. Signs and Parking Meters

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 signposts per city standard. Any existing traffic control devices damaged due to the Contractor's negligence shall be replaced at his expense.

Existing parking meters in direct conflict with the proposed work shall be removed and stored and replaced by NHDTTP. The Contractor shall provide a full week's notice to the NHDTTP when this work is necessary. As work progresses, the Contractor shall make every effort to complete the work to a point the parking meters can be reinstalled, and parking re-established on the respective street. The cost of the work of removal, storage and replacement of any parking meter required by construction shall be included in the lump sum bid for "Maintenance and Protection of Traffic".

The Contractor will not be allowed to bag existing parking meters when street parking spaces must be removed from service. When parking meters must be bagged, the Contractor shall notify the NHDTTP by no later than noon of the business day before the cover needs to be placed. In addition, The Contractor shall provide the duration of the bagging required and the NHDITP will remove the bag at the stated time.

The Department of Transportation, Traffic and Parking will bill the Contractor for the revenue lost from the removed or covered parking meters for the duration of their inactivity. This billing will include those parking meters not removed, but which must be covered due to loss of parking on the street due to construction staging. The Contractor shall be sure his/her Lump Sum Price for "Maintenance and Protection of Traffic" includes the cost of coordination with the NHDTTP and the lost parking revenue that will be assessed by the NHDTTP. Refer to Modification to Item 971 "Maintenance and Protection of Traffic" within these specifications for additional information.

Should any existing parking regulation signage interfere with the proposed construction and require relocation, replacement or adjustment, that work will be performed by the NHDTTP. The Contractor shall provide a minimum of one (1) week's notice of each sign requiring relocation, replacement or adjustment. Any cost involved in this work shall be included in the lump sum price for "Maintenance and Protection of Traffic".

30. 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 repair meets the City's permanent trench repair specifications. In addition, certain portions of designated streets, as shown on the plans, may be milled curb to curb to a depth of 2" minimum and overlaid with HMA to produce a new pavement surface. This work will generally occur in areas of significant cross-street trenching.

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31. Plugging/Abandoning/Supporting Existing Utilities

This project involves the plugging and abandonment-in-place of both existing sanitary and storm sewer main, structure and lateral piping. The intent is to abandon as much piping in place as possible after filling the voids with a low strength slurry (CLSM) and plugging. The Contractor shall be required to submit a detailed plan/sequence of abandonment for each area on the plans where abandonment of existing storm or sanitary lines/structures are shown to be abandoned/removed.

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. 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. However, should the Contractor encounter an unknown utility that the Utility Company requires to be supported, due to required excavation, the Contractor shall be paid for that support at the Contract linear foot price bid for "Support of Existing Utilities Not Shown on the Drawings". This item shall only be measured for payment along the linear footage of exposed utility pipe actually supported within the normal trench pay limits.

32. 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 to the public and the University. 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.

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Yale Campus / Trumbull Street Area Phase 2

1. Advance Work
    a. Relocation of Utilities
    b. Point Repairs to Existing Pipes
    c. Test Pits
    d. Cleaning and CCTV Inspection of Existing Pipes
    e. CIPP Lining of Existing Pipes
2. Construct Pearl Street East End Manhole & Drainage Pipe
3. Construct Pearl Street from State Street to Orange Street
4. Construct Orange Street/Pearl Street intersection from Northbound Lane of Orange Street to Pearl Street
5. Construct Orange Street Northbound Lane and middle of street at Pearl Street Intersection.
6. Construct Southbound Lane and middle of street at Pearl Street Intersection.
7. Construct Pearl Street from Orange Street to Lincoln Street.
8. Construct Lincoln Street from Trumbull Street to Pearl Street
9. Construct Bradley Street from Orange Street to Whitney Avenue
10. Construct Whitney Avenue Northbound Lane at Corner of Bradley Street
11. Construct Whitney Avenue North of Bradley Street to Sachem Intersection
12. Construct Whitney Avenue North of Sachem Street Intersection.
13. Construct Whitney Avenue between Sachem and Humphrey Street.
14. Construct Whitney Avenue South of Humphrey Street Intersection.
15. Construct Whitney Avenue from Trumbull Street to North of Island.
16. Construct Whitney Avenue from North of Island to Bradley Street and construct Catch Basin connections and storm laterals across both northbound lanes from Bradley Street to Humphrey Street.
17. Construct Whitney Avenue Southbound Lane Catch Basin Connections and storm laterals from Bradley Street to north of Sachem Street (For Southerly Corner of Sachem Street Connection See Stage 18)
18. Construct Whitney Avenue Southbound Lane Catch Basin Connections and storm laterals South of Humphrey Street
19. Construct Whitney Avenue to Sachem Street southerly corner manhole connections.
20. Construct Sachem Street from Whitney Avenue to existing 8” PVC storm east of Hillside Avenue.

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33. Construction Safety

The Contractor is cautioned to take special notice of the close proximity of overhead wires and utility poles 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. Each Superintendent or Foreman 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 to prevent 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 the Contractor's 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 a designated Safety Officer.

34. 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 separately. Any items not contained in the Bid Items shall be included in the various other Bid Items.

35. List of Drawings

The following list contains the Contract Drawings for this project:

SHEET NO.	TITLE
01	COVER SHEET
02	GENERAL NOTES
03	EXISTING CONDITIONS PEARL STREET

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04	EXISTING CONDITIONS PEARL STREET, LINCOLN STREET
05	EXISTING CONDITIONS BRADLEY STREET, WHITNEY AVENUE
06	EXISTING CONDITIONS WHITNEY AVENUE
07	EXISTING CONDITIONS WHITNEY AVENUE, SACHEM STREET
08	EXISTING CONDITIONS LINCOLN STREET AND BRADLEY STREET
09	PEARL STREET PLAN & PROFILE
10	PEARL STREET PLAN & PROFILE
11	PEARL STREET PLAN & PROFILE
12	LINCOLN STREET PLAN & PROFILE
13	BRADLEY STREET PLAN & PROFILE
14	WHITNEY AVENUE PLAN & PROFILE
15	WHITNEY AVENUE PLAN & PROFILE
16	WHITNEY AVENUE PLAN & PROFILE
17	WHITNEY AVENUE PLAN & PROFILE
18	SACHEM STREET PLAN & PROFILE
19	LINCOLN STREET PLAN & PROFILE
20	BRADLEY STREET PLAN & PROFILE
21	PEARL STREET CURED-IN-PLACE-PIPE LINING
22	PEARL STREET, LINCOLN STREET CURED-IN-PLACE-PIPE LINING
23	BRADLEY STREET, WHITNEY AVENUE CURED-IN-PLACE-PIPE LINING
24	WHITNEY AVENUE CURED-IN-PLACE-PIPE LINING
25	WHITNEY AVENUE, SACHEM STREET CURED-IN-PLACE-PIPE LINING
26	LINCOLN STREET, BRADLEY STREET CURED-IN-PLACE-PIPE LINING
27	UTILITY CROSS SECTIONS
28	UTILITY CROSS SECTIONS
29	UTILITY CROSS SECTIONS
30	RESTORATION PLAN PEARL STREET
31	RESTORATION PLAN PEARL STREET AND LINCOLN STREET
32	RESTORATION PLAN BRADLEY STREET AND WHITNEY AVENUE
33	RESTORATION PLAN WHITNEY AVENUE
34	RESTORATION PLAN WHITNEY AVENUE AND SACHEM STREET
35	RESTORATION PLAN LINCOLN STREET AND BRADLEY STREET

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36	MAINTENANCE AND PROTECTION OF TRAFFIC GENERAL NOTES
37	MAINTENANCE AND PROTECTION OF TRAFFIC SIGNS
38	PEARL STREET M&PT
39	PEARL STREET M&PT
40	ORANGE STREET M&PT
41	PEARL STREET M&PT
42	PEARL STREET M&PT
43	PEARL STREET LINCOLN STREET BRADLEY STREET M&PT
44	WHITNEY AVENUE M&PT
45	WHITNEY AVENUE M&PT
46	WHITNEY AVENUE M&PT
47	WHITNEY AVENUE M&PT
48	WHITNEY AVENUE M&PT
49	WHITNEY AVENUE M&PT
50	WHITNEY AVENUE M&PT
51	SACHEM STREET M&PT
52	MAINTENANCE AND PROTECTION OF TRAFFIC ORANGE STREET DETOUR
53	MAINTENANCE AND PROTECTION OF TRAFFIC SACHEM STREET DETOUR
54	SIGNS FOR CONSTRUCTION AND PERMIT OPERATION
55	MAINTENANCE AND PROTECTION OF TRAFFIC DETAILS
56	MAINTENANCE AND PROTECTION OF TRAFFIC DETAILS
57	GREATER NEW HAVEN WPCA STANDARD DETAILS
58	GREATER NEW HAVEN WPCA STANDARD DETAILS
59	GREATER NEW HAVEN WPCA STANDARD DETAILS
60	CITY OF NEW HAVEN STANDARD DETAILS
61	CITY OF NEW HAVEN STANDARD DETAILS
62	CITY OF NEW HAVEN STANDARD DETAILS
63	CITY OF NEW HAVEN STANDARD DETAILS
64	CITY OF NEW HAVEN STANDARD DETAILS
65	CITY OF NEW HAVEN STANDARD DETAILS
66	CITY OF NEW HAVEN STANDARD DETAILS
67	CITY OF NEW HAVEN STANDARD DETAILS

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68	CITY OF NEW HAVEN STANDARD DETAILS
69	MISCELLANEOUS DETAILS
70	MISCELLANEOUS DETAILS
71	PRECAST CONCRETE STRUCTURE NO.1
72	EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE
73	EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE
74	EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE
75	EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE
76	TREE PRESERVATION PLAN PEARL STREET
77	TREE PRESERVATION PLAN PEARL STREET AND LINCOLN STREET
78	TREE PRESERVATION PLAN BRADLEY STREET AND WHITNEY AVENUE
79	TREE PRESERVATION PLAN WHITNEY AVENUE
80	TREE PRESERVATION PLAN WHITNEY AVENUE AND SACHEM STREET
81	TREE PRESERVATION PLAN LINCOLN STREET AND BRADLEY STREET
82	TREE PRESERVATION DETAILS
83	TREE PRESERVATION TREE TABLE
84	TREE PRESERVATION TREE TABLE
85	SOIL BORING LOGS
86	SOIL BORING LOGS
87	SOIL BORING LOGS
88	SOIL BORING LOGS
89	FRONTIER COMMUNICATIONS STANDARD DETAILS

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36. Bidder's Checklist

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

1. Bid Proposal
2. Bid Security/Bond
3. Bidder's Qualifications Form
4. MBE /WBE: See Section 40 below (Clean Water Fund Memorandum 2019-003)
5. DAS Pre-qualification Certification: See Section 36 below (DAS Update Bid Statement)
6. American Iron and Steel – Bidder Certification
7. Contract Arborist Certification/Qualifications
8. Independent Land Surveyor for Construction Monitoring
9. Contractor's Engineer for Designing Trench / Utility Support Systems
10. Contractor's Resumes
    - Project Manager
    - Full time On-site Superintendent

37. Pre-Qualifications

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

38. 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

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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.

39. 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.

40. 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.

41. 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 Engineering@tetratech.com. Addenda to the Bid will be issued 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.**

42. Basis of Award

Delete the first paragraph of Section 103-01 of the Standard Specification and replace it 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 or reject any and/or all bids."

43. Payment Provisions

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

§ 102-16: SPECIAL SPECIFICATIONS AND NOTES

44 Addenda

a. See Section 102-07 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.

45. 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.

46. 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

§ 102-16: SPECIAL SPECIFICATIONS AND NOTES

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.

47. 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.

48. Connecticut DEEP Required Contract Provisions

49. Contractor's Exempt Purchase Certificate

50. Executive Order No. Three

51. Executive Order No. Seventeen

52. DEEP CWF Memorandum 2019-003 and DBE Subconsultant Verification Form

53. Connecticut DEEP Project Sign Detail

54. DEEP Revised American Iron and Steel (AIS) Memorandum

55. Davis – Bacon Memorandums / Payroll Certification Form

56. US EPA Telecom / Video Prohibition Memorandum

Connecticut DEEP Required Contract Provisions

(Required Contract Provisions Follow This Page)

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 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 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 of 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;

(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 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-470 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

(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 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 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.)

(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.

(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 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 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 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 of 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 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 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 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 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.

(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 sureties 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 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 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

(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 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.

(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 proposals. 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.

(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 (1) (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

(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. 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 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 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 negotiations 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;

(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 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 negotitations are permitted in accordance with subdivision (18) of subsection (h) of this 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 $2 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.

(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 nonresponsible 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.

(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:

(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 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 6 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 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

(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 these funds and will be responsible for any and all tax law violations which occur as a result of their 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) (H) (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 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.

(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 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 (h) (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.

(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.

(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 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 architectual/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.

(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 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 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 annual 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 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 similiar 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)

Contractor's Exempt Purchase Certificate

(Exempt Purchase Certificate Follows This Page)

* *

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.

______________________	_____________	Name of Firm:
Signature of Contractor	Date	Business Address:

* *

Executive Order No. Three

(Executive Order No.3 Follows This Page)

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 the1969 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, re1igious creed, age, sex or national origin, or ancestry of any individual, and that the signer will either affirmatively cooperate in the implementation of the policy and provisions of this Order, or that it consents and agrees that recruitment, employment and the terms and conditions of employment under the proposed contract shall be in accordance with the purposes and provisions of the Order.

IV

The labor commissioner may by regulation exempt certain classes of contracts, subcontracts or purchase 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 l969 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 of 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.

XIII

The labor commissioner may delegate to any officer, agency or employee in the executive branch any function or duty of the labor commissioner under this Order except authority to promulgate regulations of a general nature.

XIV

This Executive Order supplements the Executive Order issued on September 28, 1967. All regulations, orders, instructions, designations and other directives issued heretofore in these premises, including 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 superceded 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.

Executive Order No. Seventeen

(Executive Order No. 17 Follows This Page)

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 al 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 his 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)

DEEP CWF Memorandum 2019-003

And

Subconsultant Verification Form

(Memorandum dated June 19, 2019 Follows This Page)

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Clean Water Fund Memorandum (2019-003)

Disadvantaged Business Enterprise (DBE) Subcontractor Participation on Clean Water Fund (CWF) Projects for 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 CWF projects.

This memorandum supersedes the **Clean Water Fund Memorandum (2016-003)**

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 DBEs.

III. EPA REQUIREMENTS

The following clause shall be included in all construction contract documents and amendments 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:

Minority Business Enterprise (MBE): 3.0 percent
Woman Business Enterprise (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. THE SIX GOOD FAITH EFFORTS AS SPECIFICALLY DEFINED BY EPA

The Six Good Faith Efforts are required methods employed by all Connecticut Department of Energy and Environmental Protection (DEEP) CWF recipients to ensure that all DBEs have the opportunity to compete for procurements funded by DEEP financial assistance dollars. The prime contractor is expected to employ the six good faith efforts throughout the entire project to insure that the DBE percentages are maintained or exceeded in the event that one DBE subcontractor needs to be substituted for another.

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 Small Business Administration (SBA) (Federal) 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.

V. 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 (a woman who is also a member of a minority class):

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 Connecticut Department of Energy and Environmental Protection (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 Connecticut Department of Transportation (CTDOT), the detailed information page within their online database suffices as proof.

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 Connecticut General Statute 4a-60g.

2. **CTDOT** - Companies that desire to do business with CTDOT as well as the DEEP should seek CTDOT certification which will be accepted by the DEEP. DBE firms are advised that the certification process can take 90 days to complete. CTDOT will certify both in state as well as out of state firms.

3. **EPA** - In the event an entity cannot be certified by CTDOT as a DBE, that entity should seek certification with EPA. Such entities must provide EPA with evidence from CTDOT denying certification.

4. **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 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

1. Within fourteen (14) calendar days after bid opening the prime contractor (apparent low bidder) shall complete and submit two copies of the DEEP Subcontractor Verification Form along with the DBE certification for each subcontractor to the municipality. The municipality must then submit one copy of these documents to DEEP as part of the authorization to award request.

2. Once DEEP authorizes the municipality to award the contract, the prime contractor is required to submit two copies of the executed DBE subcontracts to the municipality who submits one copy to the DEEP Financial Administrator.

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

4. Should the prime contractor not meet the goals, documentation of good faith efforts will be required to be submitted to the DEEP Municipal Facilities Wastewater 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.

5. In the event that a DBE subcontractor is substituted for another during the project, two copies of the executed subcontract along with the corresponding DBE certification for the substitute are submitted to the municipality who forwards one copy of each to the DEEP Financial Administrator.

6. If additional construction costs are approved by DEEP, the prime contractor employs the good faith efforts defined above to meet the goals for the new total eligible contract amount.

VIII. DAS PREQUALIFICATION CERTIFICATION FOR DBE SUBCONTRACTORS

At time that the prime contractor submits copies of the executed DBE subcontracts to the municipality, two copies of the current DAS Prequalification Certificate for each DBE subcontractor whose subcontract value is equal to or greater than $500,000 must also be submitted. In turn, the municipality is required to submit one copy of each DBE Prequalification Certification to the DEEP Financial Administrator. Suppliers of material or products who do not do installation or construction work are not subject to the DAS Construction Contractor prequalification requirement.

IX. SUBMISSION OF THIS FORM

This form is to be signed by the contractor or the contractor's authorized representative. The form is then submitted to the municipality's representative for signature. The municipality includes the form as part of the authorization to award request to DEEP.

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 _____

Name of Prime Contractor _____
Name and Title of Authorized Officer _____
Authorized Signature _____ **Date** _____

Town Official and Title _____
Authorized Signature _____ **Date** _____

X. DEFINITIONS

CGS: Connecticut General Statutes

CTDOT: Connecticut Department of Transportation

CWF: Clean Water Fund

DAS: Connecticut Department of Administrative Services

DBE: Disadvantaged Business Enterprise

DEEP: Connecticut 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)

June 19, 2019
Date

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

Disadvantage Business Enterprise (DBE)

Subcontractor Verification Form

Note to general contractor: You are required to complete this form for each DBE (MBE or WBE) subcontractor to be employed in the completion of this contract, and submit an original of each completed form, along with each subcontractor's current, valid DBE certification, to the municipality within 14 days of bid opening. Failure to submit this form and the DBE certification within 14 days of bid opening may render your bid non-responsive and result in the rejection of your bid.

Name of subcontractor: _____

Address: _____

Contact person: _____

Phone number: _____-_____-_____ Is the subcontractor a ☐ MBE or ☐ WBE?

Type of work to be performed_____

Estimated dollar amount of subcontract: $_____

Percent of total contract _____%

Please attach a current, valid copy of the subcontractor's DBE certification form to this document.

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 the 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, and a copy of this form must be completed for the replacement subcontractor. The DBE percentages shall be maintained or exceeded in the event of one subcontractor being substituted for another.

Contract name: _____

Prime contractor company name: _____

Prime contractor authorized signature: _____ Date: _____

Connecticut DEER Project Sign Detail

(Project Sign Detail Follows This Page)

CONNECTICUT CLEAN WATER FUND PROJECT SIGN

8’ 0”

4’ 0”

State of Connecticut

Ned Lamont, Governor

Department of Energy and Environmental Protection

Katherine Dykes, Commissioner

Yale Campus / Trumbull Street Area Sewer Separation Project Phase 2

Environmental Protection for The Greater New Haven WPCA

$#,###,### Sewer Separation Project
$#,######## State Grant
$#,###,## State Loan

From the
Connecticut DEEP Clean Water Fund

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.

DEEP Revised American Iron and Steel Memorandum

(Memorandum Follows This Page)

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

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

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

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 or 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 <u>not</u> 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 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.

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 zees. 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.

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: For 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 1452 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 question 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/aisrequirement.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

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
General • Waiver request includes the following information: — 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		
Cost Waiver Requests • Waiver request includes 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 — 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		
Availability Waiver Requests • 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: — 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.

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 Contactor 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

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

Davis – Bacon Memorandums

Davis-Bacon Payroll Certification Form

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

NOV 3 0 2009

OFFICE OF
WATER

MEMORANDUM

SUBJECT: Application of Davis-Bacon Act Wage Requirements to Fiscal Year 2010 Clean Water State Revolving Fund and Drinking Water State Revolving Fund Assistance Agreements

FROM: Peter S. Silva
Assistant Administrator

TO: Water Management Division Directors
Regions I - X

On October 30, 2009, P.L. 111-88, "Making appropriations for the Department of the Interior, environment, and related agencies for the fiscal year ending September 30, 2010, and for other purposes," was enacted. This law provides appropriations for both the Clean Water State Revolving Fund (CWSRF) and the Drinking Water State Revolving Fund (DWSRF) for Fiscal Year 2010, while adding new requirements to these already existing programs. One new requirement, and the focus of this memorandum, requires the application of Davis-Bacon Act requirements.

P.L. 111-88 includes the following language in Title II under the heading, "Administrative Provisions, Environmental Protection Agency,"

> For fiscal year 2010 the requirements of section 513 of the Federal Water Pollution Control Act (33 U.S.C. 1372) shall apply to the construction of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund as authorized by title VI of that Act (33 U.S.C. 1381 et seq.), or with assistance made available under section 205(m) of that Act (33 U.S.C. 1285(m)), or both.
>
> For fiscal year 2010 the requirements of section 1450(e) of the Safe Drinking Water Act (42 U.S.C. 300j-9(e)) shall apply to any construction project carried out in whole or in part with assistance made available by a drinking water treatment revolving loan fund as authorized by section 1452 of that Act (42 U.S.C. 300j-12).

In order to comply with this provision, States must include in all assistance agreements, whether in the form of a loan, bond purchase, grant, or any other vehicle to provide financing for a project, executed on or after October 30, 2009 (date of enactment of P.L. 111-88), and prior to

October 1, 2010, for the construction of treatment works under the CWSRF or for any construction under the DWSRF, a provision requiring the application of Davis-Bacon Act requirements for the entirety of the construction activities financed by the assistance agreement through completion of construction, no matter when construction commences.

Application of the Davis-Bacon Act requirements extend not only to assistance agreements funded with Fiscal Year 2010 appropriations, but to all assistance agreements executed on or after October 30, 2009 and prior to October 1, 2010, whether the source of the funding is prior year's appropriations, state match, bond proceeds, interest earnings, principal repayments, or any other source of funding so long as the project is financed by an SRF assistance agreement. If a project began construction prior to October 30, 2009, but is financed or refinanced through an assistance agreement executed on or after October 30, 2009 and prior to October 1, 2010, Davis-Bacon Act requirements will apply to all construction that occurs on or after October 30, 2009, through completion of construction.

Notably, there is no application of the Davis-Bacon Act requirements where such a refinancing occurs for a project that has completed construction prior to October 30, 2009. This provision does not apply to any project for which an assistance agreement was executed prior to October 30, 2009, no matter when construction occurs.

Further information may be provided in the form of "Questions and Answers" if necessary.

We fully understand the complexity of this provision and the difficulties involved in its application. If you have any question, please contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at (202) 564-0614, or Philip Metzger, Attorney-Advisor, Infrastructure Branch, Drinking Water Protection Division, at (202) 564-3776.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Clean Water Fund Memorandum (2010-0816)

August 16, 2010

TO: ALL CONNECTICUT MUNICIPALITIES AND ENGINEERING CONSULTANTS

RE: DAVIS BACON REQUIREMENTS FOR CONSTRUCTION CONTRACTS

As of 10/30/2009, all financing agreements that utilize the Clean Water Fund must comply with Davis-Bacon Act (DB) wage requirements. DB wage requirements are federally established rates to be paid to laborers and mechanics on public works projects. Application of the DB requirements extends to all assistance agreements executed on or after October 30, 2009. If a project began construction prior to 10/30/2009, but is financed through an assistance agreement executed on or after 10/30/2009, DB requirements will apply to all construction that occurs on or after 10/30/2009 and through the completion of construction. This requirement is in addition to compliance with Connecticut's Prevailing Wage rates.

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 requirements have been complied with by the undersigned as principal contractor, and by each subcontractor employing mechanics or laborers at the site of the work;
3. That I, the undersigned, pay or supervise the payment of the persons employed by (insert name of 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 See. 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 a 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;
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.
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 l 8 and Section 231 of Title 31 of the United States Code.

It is not necessary to submit the state and federal certified payroll forms with each pay request to DEP provided the above certification has been submitted.

If utility relocation work by private utility companies is required for the project (generally for projects involving separation of storm drainage from sanitary sewers), all utility companies must comply with DB regardless of the funding source. The only exception to this requirement is when 1) there is no state or federal funding for the utility relocation work, and 2) the utility company relocates their utilities before the municipality commences construction of the CWF project.

If you have any questions, please contact George Hicks at 860-424-3752.

Paul E. Stacey, Director
Planning & Standards Division
Bureau of Water Protection & Land Reuse

Attachment: Outline of Davis Bacon Requirements

Outline of the Davis-Bacon Act Requirements

Determine the type of construction (serves as the basis for prevailing wage classification)

- **Residential** -single family houses, townhouses, and apartment buildings up to four stories
- **Building** - sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. Also apartment buildings greater than 4 stories, parking garages, service stations, office buildings, fire stations, etc.
- **Highway** - roads, streets, highways, sidewalks, runways, parking areas, and other paving work not incidental to other construction
- **Heavy** - those projects, generally public works, which cannot be classified as Residential, Building, or Highway Construction

General Requirements

- Obtain Wage Determinations: http://www.wdol.gov Wage Determinations online
- Davis-Bacon Wage Determinations
  - Established by geographic area (usually a county or a group of counties)
  - Published for the 4 types of construction: Residential, Building, Highway, Heavy (classifications may be combined in many areas)
  - May be modified periodically
  - Must be included in bid documents and contract for construction with appropriate Federal labor standards provisions
- Verify prime contractor and all subcontractor eligibility against GSA Debarment List
- On-line access at: http://epls.arnet.gov
- Make record of verification to contract file
- Bid/contract documents must contain:
  - Applicable Davis-Bacon Wage Determination (WD)
  - Federal labor standards clauses

Wage Determination "Lock-In" Rules

- Competitive bidding: Modifications published less than 10 days before bid opening may be disregarded if found there is not sufficient time to notify bidders, and a report is made to contract file
- Lock-in at bid opening provided contract is awarded within 90 days
- Must update wage determination if contract award is more than 90 days after bid opening
- Once a Davis-Bacon wage rate has been "locked," it stays in effect for the duration of the project.

Municipal Responsibilities

- Ensure bid/contract documents contain applicable wage determination and labor clauses (prime and subcontractors)
- Ensure no contracts are awarded to ineligible contractors

- Ensure submission of certified payrolls
- Ensure sole source contracts contain labor standards

- Conduct onsite interviews with laborers and mechanics
  - Minimum once within 2 weeks of initial payroll and once within 2 week of final payroll per contractor
- Spot-check payrolls/related records
  - Minimum once within 2 weeks of initial payroll and once within 2 week of final payroll per contractor
- Periodically review use of apprentices and trainees
- Report potential violations to EPA DB contact and DOL Wages and Hours District Office
- Maintain full documentation
- Maintain records 3 years after completion

Prime Contractor's Responsibilities

- Prepares and submits certified payrolls for its own employees.
- Submits certified payrolls for all subcontractor employees.
- Reviews wage determination and requests additional classifications when needed.
- Provides subcontractors with forms and guidance concerning DB requirements.
- Provides DB Poster and interviewer confidential access to employees on site.
- Instructs lower-tier subcontractors of their responsibilities

Subcontractor's Responsibilities

- Prepares & submits certified payrolls each week for its own employees.
- Instructs any lower-tier subcontractors of responsibilities.
- Reviews wage determination and requests additional classifications if needed.
- Provides DB Poster and interviewer confidential access to employees on-site.

Federal and State Wage Rates Apply

- Contract must contain both Federal and State wage decisions/contract standards
- Employers must pay higher of two rates
- Payrolls must carry Federal statement of compliance (backside of payroll form WH-347) and the State's statement of compliance

Job Site Postings

- Notice to All Employees (WH1321)
- Davis-Bacon wage decision OR Project Wage Rate Sheet
- Protected from elements
- Accessible to all laborers and mechanics
- Easy for contractors and subs to know what rates they must pay
- Easy for laborers and mechanics to see whether they are paid properly
- Easy for the contract administrators reviewing payroll reports

- Should be prepared only after the wage decision has been locked in
- Davis-Bacon wage decision OR Project Wage Rate Sheet
- Should be prepared only after the wage decision has been locked in

Certified Payroll

- Form WH 347
- Compliance statement (w/original signature of corporate official or designee)
- Payrolls required weekly
- Identify first and final payroll
- Prime contractor reviews prior to submission
- Payroll retention is 3 years

Violations of DB

- Misclassification of laborers and mechanics.
- Failure to pay full prevailing wage, including fringe benefits, for all hours worked (including overtime hours).
- Inadequate recordkeeping, such as not counting all hours worked by an individual in two or more classifications during a day.
- Failure to maintain a copy of bona fide apprenticeship program and individual registration documents for apprentices.
- Failure to submit certified weekly payrolls.
- Failure to post the Davis-Bacon poster and applicable wage determination

All alleged violations should be reported to the EPA DB Coordinator and to Department of Labor

Connecticut Department of Energy and Environmental Protection
Payroll Certification-Davis Bacon Compliance

Project name: _____

Project location: _____

Contract number: _____

Pay period: _____ to _____

I, _____, the undersigned, pay or supervise the payment of the persons employed by_____, prime contractor.

1. All of the U.S. Department of Labor Davis-Bacon requirements have been complied with by the undersigned as principal contractor, and by each subcontractor employing mechanics or laborers at the site of the work.
2. 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;
3. Each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract or a 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;
4. 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.

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

Name: _____ (please type or print).
Title: _____

Signature: _____ Date_____

USEPA

Telecommunication / Video Prohibition Memorandum

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

OFFICE OF WATER

MEMORANDUM

SUBJECT: Prohibition on Certain Telecommunication and Video Surveillance Services or Equipment in the SRF Programs

FROM: Kiri Anderer, P.E., Acting Associate Branch Chief
Infrastructure Branch, OGWDW

KIRSTEN ANDERER Digitally signed by KIRSTEN ANDERER Date: 2020.12.11 07:55:52 -05'00'

Michael Deane, Branch Chief
State Revolving Fund Branch, OWM

MICHAEL DEANE Digitally signed by MICHAEL DEANE Date: 2020.12.11 17:56:38 -05'00'

TO: SRF Branch Chiefs
Regions 1-10

Effective August 13, 2020, recipients and subrecipients of EPA funded assistance agreements, including borrowers under EPA funded revolving loan funds, must comply with regulations at 2 CFR 200.216, *Prohibition on certain telecommunication and video surveillance services or equipment*, implementing section 889 of Public Law 115-232. The regulation prohibits the use of Federal funds to procure (enter into, extend, or renew contracts) or obtain equipment, systems, or services that use "covered telecommunications equipment or services" identified in the regulation as a substantial or essential component of any system, or as critical technology as part of any system. Prohibitions extend to the use of Federal funds by recipients and subrecipients to enter into a contract with an entity that "uses any equipment, system, or service that uses covered telecommunications equipment or services" as a substantial or essential component of any system, or as critical technology as part of any system. Certain equipment, systems, or services, including equipment, systems, or services produced or provided by entities subject to the prohibition are recorded in the System for Award Management exclusion list.

As described in section 889 of Public Law 115-232, covered telecommunications equipment or services includes:

- Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- Telecommunications or video surveillance services provided by such entities or using such equipment.

- Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Applicability in the State Revolving Fund (SRF) Programs

Clean Water and Drinking Water SRF (CWSRF and DWSRF) programs may not expend equivalency funds for these products on or after August 13, 2020. States must ensure that equivalency assistance agreements include the telecommunications prohibition condition provided by EPA's Office of Grants and Debarment (OGD) in OGD's most recent EPA General Terms and Conditions. The condition must also be in construction contracts associated with equivalency assistance agreements.

There is no exhaustive list of components and services that fall under the prohibition. State SRF managers and local assistance recipients should exercise due diligence and be particularly mindful of project components with internet or cellular connections. For example, recipients should be mindful of automatic meter reading (AMR) technology and advanced metering infrastructure (AMI), instrumentation control systems (e.g. process control systems, distributed control systems and programmable logic controls), and security cameras and other electronic security measures to ensure that those items are procured from a non-excluded entity. Items included in the prohibition are not eligible SRF costs, and the SRF programs cannot reimburse borrowers for these costs.

The prohibition also applies to the CWSRF administrative funds (if states are billing those costs to the federal CWSRF capitalization grant) and the four DWSRF set-asides. States should be mindful of items such as cell phones, computers, and mobile WiFi routers or hotspots funded by those accounts.

If you have questions on the implementation of this grant condition, please contact Michael Deane at Deane.Michael@epa.gov or Kiri Anderer at Anderer.Kirsten@epa.gov.

56. MODIFICATIONS TO THE GNHWPCA STANDARD SPECIFICATIONS

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56. Modifications to the GNHWPCA Standard Specifications

The Contractor is hereby notified of the following modifications to the Greater New Haven WPCA Standard Specifications, which shall be made a part of the Contract Documents and shall be strictly adhered to.

Modification to Item 102 "Bidding Requirements and Conditions"

Under Section 102 of the General Provisions of the Standard Specifications: **Delete** the first paragraph in the section and Replace with the following:

§ 102-07 INTERPRETATIONS AND ADDENDA

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 as 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.

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.

INSERT:

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.

57. MODIFICATIONS TO THE GNHWPCA STANDARD TECHNICAL SPECIFICATIONS

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Item 201 "Clearing and Grubbing":

The following modifications are made to Item 201 of the Standard Specifications under the "Description" heading:

Remove the existing paragraph and Insert the following paragraphs:

"This work shall consist of clearing, grubbing, removing and disposal of all trees, of the designated size shown for removal on the drawings, brush, stumps, fences, debris and miscellaneous structures not covered under other Contract items within the construction area and other such areas as specified or directed. Refer to Section 1513 Tree Preservation for the protection and preservation of existing trees to remain.

"This item shall also include the protection and/or removal and resetting of all property pins, merestones and monuments impacted by the proposed construction, fences, parking meters, newspaper boxes, traffic control structures, hand holes, mailboxes, signs, sign posts, railings, stumps, shrubs, hedges, plantings, stone fences, etc., ornamental and utilitarian domestic accessories, as shown on the drawings, required to perform the proposed work or as directed by the Engineer and any other improvements as necessary to complete the work."

"Relocated shrubs, hedges, etc., shall be planted in accordance with Item 949. The Contractor shall not remove or prune any tree without the consent of the Authority / Engineer and only under the direction of the Contract Arborist. In some cases, the trees designated for removal may only be stumps and the Contractor shall remove or cut down the stumps in the manner detailed or directed by the Contract Arborist at the Contract Bid Price."

Under the "Construction Details" heading of this Item: Remove the first three (3) paragraphs and insert the following paragraph:

"Any reference to the "Engineer" shall be changed to the "Project Arborist". Tree or stump removal and any tree pruning shall conform to the Contract details, the requirements of Section 1513 "Tree Preservation" specification, or the direction of the Contract Arborist and/or Project Arborist."

Under the "Measurement" heading of this Item: Add the following paragraph after the last paragraph:

"Under this Item of work, there shall be separate measurement for payment for the existing street trees shown to be removed by the Contract Drawings, or when requested by the Engineer. Trees removed will be measured for payment by each of the particular size shown in the Bid Proposal"

Under the "Payment" heading of this Item: After the last paragraph, Add the following:

"Payment for removal of complete trees, or trees that have been partially removed by others, shall be paid at the Contract unit price bid, which price shall include the removal of the sidewalk to the nearest joint required to facilitate the removal, the removal of the tree, the removal of the stump completely or partially, as detailed or directed, the removal and disposal of any existing grate, the furnishing and backfill of the void with material as detailed or directed, protection of surrounding street infrastructure and private property surface improvements, and any other labor, material, tools and equipment necessary to accomplish the removal to the satisfaction of the Project Arborist."

Under the "Payment" heading of this Item: **Remove** the pay items after the last paragraph and **Insert** the following:

Item Number	Pay Item	Pay Unit
201.01	Clearing and Grubbing	LS
201.02	Removal of Existing Tree (3" to 6" Caliper)	EA
201.03	Removal of Existing Tree (6" to 10" Caliper)	EA
201.04	Removal of Existing Tree (10" to 16" Caliper)	EA
201.05	Removal of Existing Tree (16" to 24" Caliper)	EA
201.06	Removal of Existing Tree (24" to 36" Caliper)	EA

Item 205 "Trench Excavation and Backfill":

The following modifications are made to Item 205 of the Standard Specifications:

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. This work is not definite but may occur. 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 existing brick sewer, which is to remain in place and use, the Contractor shall not be allowed to use Hoe-Paks or vibratory rollers on Pearl Street, unless specifically authorized by the Engineer."

"The Contractor shall use a non-impact type excavation support structure for the proposed excavation adjacent to the brick sewer in Pearl Street involving the pipe trenching. The excavation support structure must be installed without the use of vibratory or impact hammers. The Contractor shall exercise special care for all excavation adjacent to the brick sewer in Pearl Street and shall provide whatever temporary shoring/bracing, soil stabilization and other approved methods necessary to ensure the brick sewer is not damaged."

Jetting will not be allowed without the specific approval of the Engineer. Due to the presence of existing combined sewers in adjacent streets within the Project limits, the Contractor will not be allowed to use Hoe-Pak equipment. The use of vibratory rollers will not be allowed within trenches, but may be used, with the approval of the Engineer, for pavement operations within these side streets."

"The Contractor shall support and protect all existing underground utilities exposed when trenching during the installation of storm and sanitary main and lateral piping and/or 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 Pit payment limits performed by conventional excavation methods shall be the actual number of cubic yards excavated, measured in place, as ordered and measured by the Engineer. 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 this Item: **Delete** Item 205.05 and **Insert** the following:

Item Number	Pay Item	Pay Unit
205.05	Test Pit Excavation	Cubic Yard

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.

Item 210 "Temporary Soil Erosion and Water Pollution Control":

The following modifications are made to Item 210 of the Standard Specifications:

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 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 per day for "Mechanical Street Sweeping"."

Under the "Construction Details" heading of this Item, **Delete** the following:

Item Number	Pay Item	Pay Unit
210	Temporary Soil Erosion and Water Pollution Control	Lump Sum

After the "Construction Details" heading of this Item: After the last paragraph, **Add** the following:

PAYMENT:

Temporary Soil Erosion and Water Pollution Control will be paid for at the bid Lump Sum price, and shall include all equipment, tools, and labor incidental to the satisfactory completion of this Item.

Mechanical Street Sweeping will be paid for at the price bid per Day, and shall include all equipment, tools, and labor incidental to the satisfactory completion of this Item.

Item Number	Pay Item	Pay Unit
210	Temporary Soil Erosion and Water Pollution Control	Lump Sum
210.10	Mechanical Street Sweeping	Day

Item 407 "Bituminous Concrete Trench Repair":

The following modifications are made to Item 407 of the Standard Specifications:

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 basins 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."

"Preceding a winter shutdown, and with the direction of the Engineer, the Contractor may be required to overlay completed sections of work within the roadways with a one-inch (1") skim coat of bituminous concrete (HMA S0.5)."

"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."

After the last paragraph, **Add** the following paragraph:

"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 utility company is responsible for placing a temporary pavement patch in their trenches, but 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 818, 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, HMA S0.5 mix shall be used; in winter months after November 15th, Class 5 (Cold Patch) will not be allowed within City streets, unless otherwise authorized by the City and the Engineer. The use of a minimum 2 inch thickness of "Hybrid Asphalt" (such as **Wespro**, 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: "Temporary Pavement Trench", "Temporary Pavement for Sidewalk and Driveway", "Utility Trench Base Course HMA S1.0", "Bituminous Concrete Base HMA S1.0", "Bituminous Concrete Overlay", "Bituminous Concrete Cold Patch" and "Hybrid Asphalt", and by the number of tons for the pay item, "Bituminous Concrete Skim Coat", shown below."

"Only the measurement of the square yardage for "Utility Trench Base Course HMA S1.0" (Items 407.80, 407.81) shall be based upon the actual area of permanent pavement placed after saw cutting for any damaged areas."

"These bids should reflect that when the processed is placed there is no separate measurement or payment for extra processed 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 cost of any base material will be paid under the item for "Processed Aggregate Base". The pay item for all trench repair shall include excavation for placement of pavement and the furnishing and placing of all courses of pavement depths as shown in the respective detail. The pay item for "Temporary Pavement for Sidewalk and Driveway, 2" HMA S0.5" shall include

the cost for a compacted backfill base, but not the final base course, which will be installed as part of the appropriate sidewalk or driveway pay item."

"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."

"The unit prices for "Bituminous Concrete Cold Patch" or "Hybrid Asphalt Trench Repair" shall include the maintenance of the winter patch during the entire winter season until a temporary "hot" bituminous pavement can be utilized. In other words, the Contractor shall only be entitled to payment for the initial placement of the winter patch material and all maintenance costs shall be included in the unit price bid."

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
407.01	Temporary Pavement Trench in Roadways, HMA S0.5, Thickness 2”	SY
407.02	Temporary Pavement Trench in Roadways (Collector), HMA S0.5, Thickness 4” (2 – 2” courses)	SY
407.03	Temporary Pavement for Sidewalk and Driveway, HMA S0.5 on Compacted Trench Backfill, Thickness 2"	SY
407.10	Bituminous Concrete Trench Repair, HMA S0.5, Thickness 4" (2 – 2” courses)	SY
407.11	Bituminous Concrete Trench Repair (Collector), HMS S0.5, Thickness 3" (2 – 1-1/2” courses)	SY
407.40	Bituminous Concrete Trench Repair (Collector), HMA S1.0, Thickness 6"	SY
407.42	Bituminous Concrete Trench Repair (Collector), HMA S1.0, Thickness 9” (2 – 4-1/2" courses) - Alternate	SY
407.60	Bituminous Concrete Cold Patch, Thickness 2”	SY
407.70	Hybrid Asphalt Trench Repair, Thickness 2"	SY
407.80	Bituminous Concrete Utility Trench Repair (Local), HMA S0.5, Thickness 4” (2 – 2” courses)	SY
407.81	Bituminous Concrete Utility Trench Repair (Collector), HMS S0.5, Thickness 3" (2 – 1-1/2” courses)	SY
407.82	Bituminous Concrete Utility Trench Repair (Collector), HMA S1.0, Thickness 6"	SY
407.83	Bituminous Concrete Utility Trench Repair (Collector), HMA S1.0, Thickness 9” (2 – 4-1/2" courses) - Alternate	SY

Item 512 "Sanitary Sewer":

The following modifications are made to Item 512 of the Standard Specifications:

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 backfilling 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 Y2 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 unit cost bid for each size of sanitary sewer pipe and service lateral."

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 for sanitary sewer pipe."

Under the "Measurement and Payment" heading of this Item: Immediately after the last paragraph, **Insert** the following:

"10. There will be no direct payment for coring through temporary sheeting or sheeting left in place for the installation of pipeing, but the cost thereof shall be included in the Contract per linear foot unit price bid for the various pipe items listed in the bid."

"11. 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 or for filter fabric. The cost shall be included in the main line unit price bid."

Under the "Measurement and Payment" heading of this Item: **Change** the Pay Unit for Item Number 512.04 from "Linear Feet" to "Vertical Feet".

Under the "Construction Details" heading of this Item: On page 206, under paragraph 8.B Low Pressure Air Testing: **Delete** the text, "ASTM C024-02" from the last sentence and **Replace** it with "ASTM C924-02"

Under the "Construction Details" heading of this Item: on page 207, under paragraph 8.B Low Pressure Air Testing: Immediately after the last sentence, **Insert** the following:

"This section applies to pipes 24 inches in diameter or less. Piping larger than 24 inches in diameter shall be tested by water exfiltration test. The procedure for water exfiltration test shall conform to the following standards:

1 Section 523 of the Standard Specifications.

2 ASTM C969-82, Standard Practice for Infiltration and ExfIltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines.

Where the two standards are in conflict, the more stringent requirement shall apply."

Item 516 "Temporary Bypass Pumping Systems":

The following modifications are made to Item 516 of the Standard Specifications:

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 combined, storm sewer and sanitary sewer systems in conjunction with the installation of the proposed piping and structures."

Under the "Materials and Equipment" heading of this Items: 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."

Item 518 " Sanitary Sewer Cleaning":

The following modifications are made to Item 518 of the Standard Specifications:

Under the "Measurement and Payment" heading of this Item: **Add** the following:

"The Contractor shall be aware that the Regional Water Authority may not permit the use of existing hydrants and that the Contractor shall include any costs for obtaining water from other sources as necessary, including any trucking costs to the Project site."

Item 520 "Sanitary Sewer Cured-In-Place Pipe Lining"

The following modifications are made to Item 520 of the Standard Specifications:

Under the "Description" heading of this Item: **Add** the following to the 1st paragraph:

Due to the size of existing pipes on Pearl Street, the existing frame, cover and a depth of brick course must be removed to accommodate the cured-in-place pipe lining and restored after installation of the liner. No separate payment will be made for removal and restoration of manhole frame and cover to facilitate installation of the liner.

Item 522" Sanitary Sewer Television Inspection":

The following modifications are made to Item 522 of the Standard Specifications:

Under the "Description" heading of this Item: Immediately after the last paragraph **Insert** the following paragraphs:

"The Contractor shall provide the services of a firm capable of performing CCTV inspection of the existing combined sewer. A "Pre" and "Post" inspection shall be made of all existing combined sewers within the Project limits, and as directed by the Engineer, to confirm service lateral locations and to determine whether any structural damage has occurred from the proposed work. This "Post" inspection shall be performed at the completion of work and prior to placing final pavement."

"The Contractor shall provide the services of a firm capable of performing CCTV inspection and location of existing sanitary sewer laterals by electronic detection. The Contractor shall coordinate all work with the Property Owner and the Engineer. The work shall include marking the location and depth of existing laterals on the surface."

Under the "Measurement and Payment" heading of this Item: **Remove** the second paragraph and **Replace** it with the following paragraphs:

"Sanitary Sewer Television Inspection (Size) (Type)" and "Combined Sewer Television Inspection (Size) (Type)" shall be paid for at the Contract unit price per linear foot for "Sanitary Sewer Television Inspection (Size) (Type)" and "Combined Sewer Television Inspection (Size) (Type)" actually completed, which price shall include all materials, labor, tools, and equipment, including pipe cleaning, incidental and necessary for the pipe inspection."

"Sanitary Sewer Lateral Television Inspection" shall be paid for at the Contract unit price per each for "Sanitary Sewer Lateral Television Inspection" and shall constitute full compensation for furnishing all labor, materials, tools, and equipment and to locate existing laterals and all work incidental thereto, including pipe cleaning, for the insertion of the push camera and/or electronic detection device into the laterals either through interior or exterior cleanouts, or by test pit, at locations as directed by the Engineer. It shall include the restoration of any damage to private property caused by the Contractor's work."

Under the "Measurement and Payment" heading of this Item: **Delete** the Pay Items and **Replace** it with the following:

Item Number	Pay Item	Pay Unit
522.01	Sanitary Sewer Television Inspection (</= 18") (Type)	LF
522.02	Sanitary Sewer Television Inspection (> 18") (Type)	LF
522.03	Combined Sewer Television Inspection (</= 18") (Type)	LF
522.04	Combined Sewer Television Inspection (> 18") (Type)	LF
522.05	Sanitary Sewer Lateral Television Inspection	EA

Item 714 "Temporary Sheet Piling":

The following modifications are made to Item 714 of the Standard Specifications:

Under the "Description" heading of this Item: After the first paragraph, **Add** the following:

"Sheeting must not be vibrated or driven. All work shall be done in a manner to minimize vibration and damage to the brick sewer. The use of temporary sheeting in other locations shall conform to the Contract Specifications and Drawings. The Contractor shall use vacuum excavation as needed to ensure that no utilities are severed by installation of the required sheeting at no additional cost.

Item 971 "Maintenance and Protection of Traffic":

The following modifications are made to Item 971 of the Standard Specifications:

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 Yale Campus/Trumbull Street Area Sewer Separation Project: Phase 2 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 Yale Campus / Trumbull Street Area Sewer Separation Project 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, CTDOT 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.

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 CTDOT, Form 818, 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 Form 818.

Under the "Materials and Methods" heading of this Item: Under 8. ***Barricades,*** After the first paragraph **Add** the following paragraphs:

"Precast Concrete Barrier Curb: All materials and methods shall conform to "Section 8.21 Precast Concrete Barrier Curb" of the CT DOT Form 818 and/or the City of New Haven requirements. This work shall include the furnishing, removing, relocating, resetting and all incidental work required for these devices. The work under MP&T will include all precast concrete barrier curb shown on the approved MP&T Plans and the Detour Plans, and as directed by the Authority, the City and the Engineer. The work shall include all safety or warning devices, and any other City requirements, including, but not limited to, reflective sheeting, flashers, barricade warning lights, etc. This item shall cover all precast concrete barrier curb, Project wide."

"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."

" 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 construction within the roadway at 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 in conflict with the proposed work and require removal/relocation, the Contractor shall restore the conduits and wiring to original or better condition and restore active service as required and ordered by the Engineer. The Contractor will hire an electrical/telecommunications contractor, if required, to ensure service is restored completely and properly. The cost for this work, including the maintenance and protection of the conduits/wiring, coordination with the electric and telecommunications owner, the removal and replacement of the conduits/wiring (up to a maximum conduit size of 2" and a wire gauge range of #8 to #14), hiring an electrical or telecommunications contractor, and any materials, tools, labor and equipment necessary to restore damaged or removed conduits/wiring, shall be measured and paid on a per linear foot basis, only for conduits/wiring directly in conflict with the proposed work, under, "Removal/Restoration of Electrical/Telecommunications Conduits and Wiring"."

"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 items in the Bid Proposal. 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 may be either a fast-drying paint or tape or epoxy, as directed by the Engineer. 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 818."

"This lump sum item shall include all construction signage, sign supports in accordance with City/State standards and details, cones, drums, barricades, precast concrete barrier curb, flashers, safety 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 including removal of existing pavement markings as directed by the Engineer, temporary pavement markings, signal timing/adjustments, traffic camera adjustments, temporary covered pedestrian walkways, changeable message signs and the temporary signalization at Orange Street/Trumbull Street.

"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."

Item 985 "Project Survey and Stakeout":

The following modifications are made to Item 985 of the Standard Specifications:

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."

58. SPECIAL TECHNICAL SPECIFICATIONS

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SECTION 1208

SIGN FACE- SHEET ALUMINUM

PART 1 - GENERAL

1.01 SUMMARY

A. This item shall consist of furnishing and installing sign face-sheet aluminum signs of the type specified, metal signposts at locations indicated on the plans or as ordered and in conformance with the plans and these specifications.

PART 2 - PRODUCTS

2.01 The Contractor shall use VLOC signposts with material and installation methods specified in the City of New Haven Detail NH-25 and NH-25A.

PART 3 - EXECUTION

3.01 Placement and dimensions of copy, border and mounting holes shall conform to details of the Department of Transportation for Regulatory, Warning and Guide signs which are available for inspection at the Department of Transportation office. Non-reflective copy, border and background shall be applied by the silk-screen process in a manner specified by the reflective sheeting manufacturer. The silk screening of all copy, border and background on Type Ill reflective sheeting shall be accomplished prior to the application of the reflective sheeting to the finished aluminum sign blank. Type III reflective sheeting shall be of the heat activated adhesive type and shall be applied in a manner specified by the reflective sheeting manufacturer.

3.02 Reflective sheeting shall be applied in such a manner that the finished sign will be wrinkle and bubble free. No splices of the reflective sheeting will be permitted on any sign face less than 30 square feet in area with one dimension of 4 feet or less and no more than one splice will be permitted on any one sign without the approval of the Engineer.

3.03 Direct application of cutout Type I, Type II or Type Ill reflective sheeting copy and border shall conform to the requirements specified by the reflective sheeting manufacturer. Cutout copy and border shall be applied directly to clean, dust free reflective sheeting background panels. Borders shall be cut neatly and butt-joined at corners and panel joints. Type I or Type II reflective sheeting used for direct applied cutout copy and border shall be uniform in brightness and color.

3.04 The fabrication of aluminum sign blanks including cutting to size and shape and the punching of mounting holes shall be completed prior to metal degreasing and the application of reflective sheeting. Aluminum sign blanks shall be free of buckles, warp, dents, cockles, burrs and defects resulting from fabrication.

3.05 After complete fabrication of the sign as indicated on the plans and in conformance with the requirements contained in the specifications, the sign shall be mounted on the type of support designated on the plans after the support has been satisfactorily installed at its proper location. The reinforcing plate shall be installed as shown on the plans.

3.06 Metal signposts shall be driven or the holes augured and the backfill thoroughly tamped after the posts have been set level and plumb. Parapet-mounted sign supports shall be installed as shown on the plans and shall be level and plumb.

PART 4 - METHOD OF MEASUREMENT

4.01 Payment for this Item will be made on a monthly basis using the square foot price in the Bid Proposal.

4.02 This work will be paid for at the contract unit price per square foot of signage, including signposts and installation following completion and approval by Engineer.

Item Number	Pay Item	Pay Unit
1208-1	Sign Face – Sheet Aluminum (Type)	Square Foot

SECTION 1505

CONCRETE STORM STRUCTURES

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

A. The Contract Drawings and the Greater New Haven Water Pollution Control Authority Standard Specifications and CTDOT Standard Specifications Form 818 apply to this Section of the Special Technical Specifications.

1.2 SUMMARY

A. This work shall consist of the design, fabrication, transport and installation of Special Concrete Storm Structures, and related appurtenances, at the locations and to the dimensions, lines and elevations shown in the details on the Contract Drawings and/or as determined by the Engineer.

B. Storm Structures are defined as Structure No. 1, as labeled on the Contract Plans.

C. The Storm Structures shown on the drawings are intended to be precast. There will be no additional compensation for the construction of the structures using cast-in-place methods if proposed by the Contractor or if required due to actual site conditions and approved by the Engineer.

D. The plans include a detail for Storm Structures to be installed. Adjustments to the design may be necessary due to field conditions and the Contractor's means and methods of construction. The Contractor shall retain the services of a Professional Engineer for the final design of the structures. The Contractor shall review the actual locations of all utilities, and the available space in the field for each Storm Structure after each pit is excavated to determine if any adjustment is required in the structure dimensions before the individual design and fabrication is started.

Should the Engineer determine that, due to unforeseen field conditions, the structure size must be changed from the size shown on the plans, the Lump Sum price for this item will be adjusted. The Lump Sum price bid for Storm Structures will be adjusted based upon the percentage increase or decrease in the total volume of concrete contained in the original bid structure.

1.3 SUBMITTALS

A. Submit to the Engineer material specifications and shop drawings for all materials specified and furnished under this Section. Submittals shall detail the size and elevations of all structure penetrations, sleeve materials and sleeve elevations. In addition, prior to beginning construction, the Contractor shall include the volume of concrete contained in the original structure utilized for the Contract lump sum bid price.

B. The Contract Drawings show a generalized configuration for the structures.

C. Before fabrication, the Contractor shall submit working drawings for each structure to the Engineer for review in accordance with Section 106-07 of the Standard Specifications. Working drawings submissions shall be signed, sealed and dated by a qualified

Professional Engineer licensed to practice in Connecticut. Drawings shall include, but not be limited to:

- Plan and cross-section of the structure, showing all structure dimensions, wall thickness, floor thickness, and roof thickness. The structures shall have no sump and the floor shall be constructed with a formed invert to transition between the inlet and outlet pipes.
- Type, size, location and spacing of steel reinforcing and inserts for anchoring threaded deformed steel bars. Bending diagrams, material lists and catalog cuts for inserts shall be provided.
- Type, size and location of lifting holes and seating fixtures. All fixtures (inserts, etc.) cast permanently into the structure shall be recessed a minimum of 20 mm.
- Location and size of all holes cast for inlet and outlet pipes, manhole risers, frames, etc. Additional reinforcement around all wall openings shall be designed and detailed.
- Complete details regarding the location of joints and the type, size and locations of gaskets and pipe boots. Joints shall be keyed.
- Material designations for all components, including, but not limited to, those identified above. Manufacturer, product and part number for each component shall also be included in the submittal.
- Location, size, embedment and spacing of ladder rungs.
- Supporting Design Computations for structures: Structures shall be designed for AASHTO MS18 and HS-20 live load using Load Factor Design.
- Provide 7 days written notice to the Engineer prior to beginning fabrication.

1.4 QUALITY ASSURANCE

A. Design Criteria

1. Precast concrete units shall be designed for all applicable dead loads, wall live loads, truck live loading (HS-20) and weight of soil of at least 120 pcf.
2. Precast concrete units shall be designed to resist buoyancy with a flood water table up to the top of the structure.
3. Precast units shall be designed in accordance with ACI 318 and ACI 350.
4. Comply with applicable requirements of American Society for Testing and Materials (ASTM) standards pertaining to construction and materials for precast structures.

B. Fabricator Qualifications -Contractor shall employ a firm that has at least 5 years successful experience in fabrication of precast concrete units similar to the units required for this project.

C. Contractor's Qualifications -Firms with at least 5 years of successful installation on projects with structures similar to those required for project.

F. Provide 7 day written notification to the Engineer prior to casting the structures. The Engineer may sample the concrete and inspect reinforcement placement at the time of fabrication.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Equip and protect factory-fabricated product to prevent damage, including chipping and cracking during transportation, storage and handling. Do not install damaged units; replace and remove the damaged units from the Project site at the Contractor's expense.

B. Lift and support units only at designated lift points. Provide permanent lifting hooks on the top.

C. Protect all lifting devices from rusting by applying red lead primer.

D. Do not store units on soft ground.

E. Provide setting diagrams and instructions as required for installation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Equip and protect factory-fabricated product to prevent damage, including chipping and cracking during transportation, storage and handling. Do not install damaged units; replace and remove the damaged units from the Project site at the Contractor's expense.

B. Lift and support units only at designated lift points. Provide permanent lifting hooks on the top.

C. Protect all lifting devices from rusting by applying red lead primer.

D Do not store units on soft ground.

E. Provide setting diagrams and instructions as required for installation.

PART 2 – PRODUCTS

2.1 MATERIALS

All material shall conform to Article M.08.02, supplemented and amended as follows:

A. Structures/Manholes shall be constructed of precast units in accordance with M.08.02-4, "Precast Units for Drainage Structures."

B. Concrete for structures shall have a minimum 28-day compressive strength of 5,000 psi. At a minimum, reinforcing steel shall comply with ASTM 615, Grade 60.

C. Connections between structures and pipe shall be flexible, watertight, be applicable for the type of pipe connected and shall conform to the provisions of ASTM C923.

D. Connections between precast units shall be flexible, watertight and shall conform to the provisions of ASTM C443.

E. Cast iron, for frames and covers, shall conform to ASTM Standard Specification for Gray Iron Castings, ASTM Designation A48, Class 35B for both frames and covers. Manhole covers shall bear letters as detailed on the plans or directed by the Engineer. All manhole covers and frames shall conform to standard City of New Haven details.

F. Manhole frame sealing includes the sealing of the frame joint area and the chimney above the cone of the manhole with an applied interior or exterior flexible seal to produce watertight joints. The seal shall be designed to prevent leakage of water into the manhole through these areas throughout the structure design life. The sleeve and extension shall be made from a high-quality rubber compound conforming to the applicable requirements of ASTM C923.

G. Ladder rungs shall be Grade 60, steel reinforced, copolymer polypropylene plastic as detailed on the drawings. Polypropylene shall conform to ASTM D4104.

H. Mortar shall conform to the requirements of Article M.11.04-Mortar.

I. All inserts, fixtures and hardware cast into the concrete shall have a corrosion-resistant coating or be fabricated from a non-corrosive material suitable for the intended use. The coating shall be either an epoxy material or galvanizing, applied mechanically or by the hot-dip process. All hardware shall be as specified on the working drawings.

J. Non-shrink gout conforming to the requirements of Sub-Article M.03.01-12 shall be used to fill lifting holes, grout joints and other filling as required to construct the structures.

K. Controlled Low Strength Material shall conform to the requirements of Item 220 of the Standard Technical Specifications.

L. Bedding material shall be as shown on the details.

M. Concrete for inverts shall conform to CTDOT Form 818 specifications for Class F concrete.

PART 3 - EXECUTION

3.1 GENERAL

A. It is the intent of this specification that the completed structures shall be watertight. Each connection to the structures and every joint will be inspected for leakage or infiltration. If the completed structures exhibit infiltration, the structure shall be sealed and repaired by the Contractor at no additional cost to the Authority. The structures will not be accepted until any leakage or infiltration has been eliminated, the structure passes a vacuum test and with the Engineer's approval.

B. Each structure shall be tested immediately after assembly and prior to backfilling as defined by ASTM C1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test.

C. Place precast structures as indicated on the plans.

D. After inspection and acceptance by the Engineer backfill with pervious structure backfill conforming to Section M.02.05, Paragraph 1 or 2 of the CTDOT Standard Specifications Form 818 (Reclaimed Miscellaneous Aggregate will not be permitted.) or with CLSM as ordered by the Engineer.

PART 4 -MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Each Concrete Structure shall be measured as a unit. It shall be noted that no additional excavation will be measured for payment under this item.

4.2 PAYMENT

Payment for the Storm Structures will be at the Contract Lump Sum Price for each Storm Structure, including excavation, dewatering, trench support, foundation bedding, filter fabric, furnishing and installation of structures, risers, frame and cover, membrane waterproofing, sand cushion, formation/construction of invert as detailed, CLSM where required, internal and external field coatings, backfilling with pervious structure backfill and compaction, testing and all equipment, tools, labor and materials incidental to the satisfactory completion of the item as shown and detailed on the Contract Drawings. CLSM when required by the Engineer will be paid at the Contract unit price for CLSM.

Item Number	Pay Item	Pay Unit
1505.1	Special Precast Concrete Structure No. 1	EA

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 manhole and catch basin structures, where called out on the plans to be abandoned, or where replaced by a new structure in the same location, shall be removed or dismantled. No structure shall be abandoned in place without the approval of the Engineer. Portions of structures left in place shall be removed to the depth designated by the Engineer and filled with CLSM or suitable backfill and compacted.

B. 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 CTDOT Standard Specifications Form 818. 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 CTDOT Standard Specifications Form 818.

C. Controlled Low Strength Material shall conform to the requirements of Item 220 of the Standard Technical Specifications.

PART 3 - EXECUTION

3.1 CONSTRUCTION METHODS

A. The Contractor shall dismantle or remove all manholes and catch basins as shown on the Contract Drawings or as directed by the Engineer.

B. The frames, grates and covers of all dismantled/removed manholes and catch basins shall be salvaged and turned over and delivered to the GNHWPCA, to the City of New Haven Central Services, Middletown Avenue or disposed of by the Contractor as ordered by the Engineer.

C. All concrete, brickwork or masonry in dismantled catch basins and manholes shall be removed to such depth that it will not encroach upon the base or sub-base course of any of the new sewers or appurtenances, structures or of any pavement. If any of the existing structure still remains, the influent and effluent pipe in said manholes and catch basins shall be plugged with

concrete or brick and mortar and the remaining structure shall be filled with an approved backfill material, thoroughly compacted to the top of the existing masonry.

D. All concrete (including bases), brickwork and masonry of catch basins and manholes to be removed shall be completely removed and shall be disposed of. No materials removed from catch basins or manholes shall be used as backfill.

E. 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

PART4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. The dismantling or removal of manhole or catch basin structures will not be measured for payment when removed to perform other required work or when a new structure is constructed in its place.

B. When a manhole or catch basin structure is shown to be abandoned on the plans and no other work or new structure will require its removal or abandonment, the structure to be abandoned shall be measured for payment per each unit abandoned by either removal or partial removal and filling.

C. Where a catch basin lateral is connected to a manhole and part of the dismantling of 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.

D. 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. All costs incurred in carrying out the work involved in the dismantling and removal of manhole or catch basin structures shall be included in other Contract unit prices of this Contract and no separate payment will be made for any work involved.

B. 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.

C. The cost for the abandonment of a manhole or catch basin structure, which is not required for other work or a new structure, shall include excavation and trench support, dismantling, the removal and delivery or disposal of salvageable parts, backfill with suitable backfill and compaction, concrete or CLSM, and all materials, labor, tools and equipment to complete the work as required and detailed.

D. 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.

Item Number	Pay Item	Pay Unit
1506.1	Abandoning Pipe in Place (4" to 10" I.D.)	LF
1506.2	Abandoning Pipe in Place (12" to 15" I.D.)	LF
1506.3	Abandoning Pipe in Place (18" to 24" I.D.)	LF
1506.4	Abandon Existing Catch Basin or Manhole Structure	EA

SECTION 1507

STORM SEWER LATERALS

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 work under this Section consists of the reconnection of existing laterals to new or existing structures, the reconnection of existing laterals to new storm sewer pipe and the installation of new storm laterals from the new storm sewer pipe or a new storm structure to the curb line or right-of-way line, as shown on the drawings or as directed, for future private inflow separation.

PART 2 -PRODUCTS

2.1 MATERIALS

A. All materials shall conform to the applicable items listed in Section M.08 of the CTDOT Standard Specifications Form 818.

B. HDPE pipe shall be smooth interior and meet the requirements of AASHTO M 252 for diameters 3 to 10 inches and M 294 for diameters 12 inches and over.

C. Connectors shall be Rubber Boot with Stainless Steel Support Strap style.

PART 3 -EXECUTION

3.1 CONSTRUCTION METHODS

A. Storm laterals shall be installed in accordance with the details shown on the drawings and the instructions of the Engineer. Storm laterals shall match the size of the existing pipe, except when the existing pipe is less than 6 inches in diameter. If the existing pipe is less than 6 inches in diameter, the Contractor shall provide a 6-inch minimum diameter storm lateral. The Contractor shall furnish ferncos of the appropriate size to connect to existing storm lateral pipes. The minimum slope for storm laterals shall be 1.0% unless otherwise directed by the Engineer. Trench excavation and backfill shall conform to Item 205 of the Standard Specifications.

B. Storm sewer services can be temporarily allowed to discharge to ground or overflow to ground as long as flows are maintained and flooding does not occur during rainstorms and no hazards, such as icing, occur. The Contractor may bypass flows by other means as he/she sees fit to maintain flows.

C. The Contractor shall make connections to the RCP storm drain pipe by coring the RCP pipe and installing rubber boot style connection.

D. The Contractor shall make connections to storm manholes and catch basins using preformed holes or by core drilling a hole of the proper size to connect the storm lateral pipe. The pipe shall be inserted so it is flush to the inside face of the structure wall and then the opening around the pipe sealed with non-shrink grout.

E. The Contractor shall install a magnetic warning tape 2-feet above each lateral pipe for its entire length.

F. The Contractor shall support and protect all existing underground utilities exposed when trenching during the installation of storm lateral piping. 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.

G. All storm sewer laterals shall be capped with a watertight cap. The end of each lateral shall be marked with a 2x4 stake cut off 12" below the ground surface. The Contractor's surveyor shall locate the end of each lateral with sufficient ties and record the depth and ties on the as-built plans to be submitted by the Contractor.

PART 4 -MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. The work required under this Section of the specifications will be measured on a linear foot basis. Linear footage of the Storm Lateral pipe shall be measured along the pipeline starting at the inside wall of the storm drain structure or mainline storm pipe fitting to the connection point or end cap.

B. Connections to the storm pipe shall be measured for payment by each connection. Connections to new catch basins or manholes shall be included in the cost of the bid price for the individual structure. Connections of laterals to existing catch basins or manholes is paid under Section 1510 of the Special Technical Specifications.

4.2 PAYMENT

A. Storm Lateral pipe, as measured for payment above, will be paid for at the Contract unit price per linear foot for: "Storm Lateral" complete in place, which price shall include furnishing and installing all materials; sawcutting and removal of pavement / curbing / sidewalk / driveway; trench support; backfilling with materials as shown on the drawings; compaction; utility warning tape; geotextile; sand cushion; temporary sheeting and bracing; connection to new/existing structures or pipe; coring; sealing voids around the pipe; flexible shielded couplings; rubber boot style connections; wyes; tees; and all tools, equipment and labor incidental thereto.

B. Connection of the storm lateral to the storm pipe shall include pavement sawcutting and removal, excavation, backfill and compaction, the coring of the opening, furnishing and installing the rubber boot connection, sheeting/shoring, the connection of the pipe flush with the inside of the pipe, and the sealing of any voids with epoxy grout.

Item Number	Pay Item	Pay Unit
1507.1	6" PVC Storm Lateral	LF
1507.2	10" HDPE Storm Lateral	LF
1507.4	15" RCP Storm Lateral	LF
1507.5	Connection of New or Existing Storm Pipe/Lateral (6" to 15")	EA

SECTION 1509

FRONTIER CONDUIT AND MANHOLE

PART 1 – GENERAL

The work under this Section shall consist of preparing, and installing concrete encased Frontier conduits and manhole in conformity with the lines, grades, dimensions, and details shown on the plans.

PART 2 – MATERIALS

Conduits, manholes, frames and covers and all incidental fittings shall be supplied by Frontier.

Concrete encasement shall have a nominal compressive strength of 2,500 pounds per square inch, concrete slumps should be 9 inches.

Sand encasement / bedding material all of which passes a 3/8" sieve, and not more than 10% passes a No. 200 sieve.

Backfill material shall be free from stones, 3" or larger, frozen materials, wood, and other extraneous materials (includes but is not limited to organic materials, debris and rubble). All backfill material shall be approved by Frontier.

Pull line shall be provided by Frontier and installed by the Contractor.

PART 3 – EXECUTION

Horizontal separator to be used for concrete encased duct structures at 4' – 5' spacing. Separators shall be left in place until concrete pour has advanced at least 15 feet ahead of separator.

Before backfilling, allow concrete to cure two hours.

The first 12" of fill above the duct structure should be sand or other granular material (not to exceed ½") tamped using lightweight equipment such as pneumatic or vibrating tampers.

All backfill shall be thoroughly compacted in layers of not more than 6 inches.

In rock excavation, provide 6" dead sand cushion around structures.

Contractor shall place marking tape 18" above duct structure. Marking tape shall be supplied by Frontier.

Contractor shall rod and rope two round and two tetra duct chambers (Frontier inspector to specify) when placed in main line conduit structures.

Contractor shall rod and rope one lateral duct to each pole and building.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

This work, being paid for on a lump sum basis, will not be measured for payment.

4.2 PAYMENT

This work will be paid for at the Contract lump sum price for "Frontier Conduit and Manhole" which price shall include sawcutting pavement, excavation, sand, concrete and backfill and all material, tools, equipment and labor incidental thereto.

Item Number	Pay Item	Pay Unit
1509	Frontier Conduit and Manhole	LS

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 catch basins, which have been altered.
7. Supplying and setting a new frame, grate, cover or granite curb inlet <u>will not</u> be considered a part of this item. If required, this work will be considered under other items shown in the Itemized Proposal

C. The following types of work will be included for item 1510.2 under this Section:

1. Inserting new pipes, including coring a new opening and installing a boot,
2. Reconstructing inverts,
3. Installing or removing traps,
4. 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.
5. Cleaning catch basins, which have been altered.
6. Install round conversion slab
7. Install standard New Haven frame and grate.

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.

Item Number	Pay Item	Pay Unit
1510.1	Alter Existing Manhole, Catch Basin Or Drop Inlet	EA
1510.2	Modify Existing Catch Basin with Conversion Slab	EA

SECTION 1513

TREE PRESERVATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division I Specifications Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the protection and stress reduction of existing trees and vegetation that interfere with, or are affected by, execution of the Work, whether temporary or permanent. Work is to be coordinated with Site & Landscape Improvements and Tree Preservation and Transplant Plans.

B. The following specifications apply to work of the Contract Arborist related to Protection and Stress Reduction Measures and coordination and oversight of the Tree Protection and Preservation Program by the Project Arborist. This work includes but is not limited to the following:

1. Coordination of Temporary Tree and Plant Protection
2. Selective tree removals for "Removal By Arborist" (RBA) (Contract Arborist) within Tree Protection Areas (TPAs).
3. Crown Pruning and Supportive cabling.
4. Root Pruning
5. Temporary Site and Tree protection fencing and temporary sign installation
6. Root Protection Matting for temporary construction access in TPAs
7. Composted Mulching
8. Liquid subsurface fertilization
9. Tree Growth Regulator (Paclobutrazol)
10. Soil Nutrient Testing
11. Super Silt Fence / Silt Fence "Trenchless Attachment" to Root Protection Matting (RPM)
12. Root Aeration Matting for permanent grade fills and walks as shown
13. Temporary Limb Guying or Clearance Pruning for construction access

14. Seasonal Supplemental Watering

15. Monitor and Treat Health

16. Supersonic Air tool (SSAT) Excavation within the Critical Root Zones (CRZs) Contingency for Remedial Measures during and after construction

1.3 DEFINITIONS

A. Certified Arborist: Credential of an individual arborist issued and administered by the International Society of Arboriculture. This credential must be current and valid to qualify to use the copyrighted designation of "Certified Arborist". Refer to www.isa-arbor.com for additional information

B. Project Arborist: Arboricultural firm contracted to provide planning and design services, technical assistance and advice to the owner and design team. Duties include but are not limited to the following: site investigation and documentation (design phase inventories, assessments, root investigations, etc.); develop tree preservation plans, methods, details and specifications; and provide final document review and monitoring of the Contract Arborist. Project Arborist is contracted directly to the owner or owner representative and acts specifically on behalf of the owner concerning tree related issues. Project Arborist shall have authority over the Contract Arborist and any disputes shall be decided by the Project Arborist and Engineer.

C. Contract Arborist: Arboricultural firm contracted to implement the approved tree preservation plans on site. All crews conducting arboricultural operations on site shall consist of at least one Certified Arborist who directly oversees all work by that crew. Arboricultural operations include, but are not limited to, pruning, tree protection device installation and maintenance (fence, matting, etc.), root pruning, air tool root excavation/exploration (SSAT), soil care activities, soil testing, mulch application, tree inspections, pesticide/chemical applications and tree removal. Special qualifications submittal is required for review and approval below. Contract Arborist will be sub-contracted by the general contractor.

D. Tree Protection Area (TPA): Area indicated on Drawings surrounding individual trees or groups of trees to be protected during construction.

E. Critical Root Zone (CRZ): Area shown on Drawings for all trees within scope of this project with a circle. Estimated area is based upon an industry standard “rule of thumb” of 1.5 feet of radius per inch of diameter at breast height (DBH). CRZ is described as the minimum area of tree roots required to be protected to maintain tree health. Any impacts within the CRZ must be mitigated based on severity up to and including tree removal if the impact is severe.

F. Tree Protection Action Key (TPAK): Matrix provided on Plan sheets for each tree indicating designated protection and stress reduction measures specified in this document.

G. Supersonic Airtool (SSAT): Handheld tool designed to focus highly compressed air (90-125 psi) provided from a large air compressor (185-375 cfm) at speeds close to 1400 mph at the tip of the tool. Widely used by arboricultural firms and consultants for multiple purposes including but not limited to: root collar investigation, CRZ investigation, root pruning (especially large roots > 1.5” diameter or were existing underground cables or

conduits are located), radial mulching and restoration of compacted soils, excavation for utilities within protected CRZs to minimize root damage from constriction.

H. Tree Removal by Arborist: Action whereby the Contract Arborist removes trees designated for "Removal by Arborist" selected from inside the TPAs. Trees shall be taken down by hand sectionally, or directionally felled to minimize damage to adjacent tree canopies, root systems, or adjacent structures. Work shall be completed by a qualified contract arborist.

I. Crown Pruning: Action by the Contract Arborist of pruning specific tree limbs to improve tree health, reduce hazard, and / or provide construction clearance.

J. Supportive Cabling: Installation of supportive cabling for designated tree branches due to weak branch attachments.

K. Root Pruning: Action indicated on Drawings to provide a more suitable cut for protected tree roots to minimize ripped or torn roots during excavations and grading with standard construction equipment. Various methods may be used.

L. Mulching of Trees: Application of a wood mulch product to areas surrounding designated trees. Mulch increases moisture-holding capacity, helps mitigate soil compaction, and increases needed soil organic composition.

M. Soil Amendments: Various product components applied to existing soil environment of protected trees, as indicated on Plan notes.

N. Tree Growth Regulator (*Paclobutrazol*): Products applied to designated trees used to regulate plant growth in such a way as to restrict canopy growth and free stored or produced energy for other uses in the tree. For highly impacted trees, more energy may be made available for fibrous root growth (to combat root loss), thicker darker leaves (allowing for increased photosynthesis, and increased drought tolerance), and pest tolerance (often an issue with construction stressed trees); among other potential benefits.

O. Limits of Disturbance (LOD) (also called Limits of Construction): Specific outer limits of all construction activities for the entire project.

1.4 SUBMITTALS

The Contract Arborist shall provide submittals as follows:

A. Product Data: For each type of product indicated.

B. Certification: For each phase, the Contract Arborist shall certify for each tree designated to remain has been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

C. Qualification Data: For Contract Arborist Firm Qualifications, submit firm and individual qualifications as follows.

1. Submit a minimum of two resumes and detailed qualifications from staff or team individuals assigned to this project as detailed under Quality Assurance below. Due to the complexity of this project, standard arboricultural experience may not qualify.

2. Provide references for above from a minimum of three commercial, nongovernmental or governmental projects for whom similar tree preservation programs have been successfully implemented. Include the following information:

   a. Project name, size and scope

   b. Number and species of trees involved

   c. Relevant photos or aerials

   d. Tree preservation budget

   e. Scope of services provided

   f. Name and contact for project owner, designer, or contractor

D. Pedestrian/Property Protection Plan: Contract Arborist to submit a written plan describing all protective measures proposed to be used to minimize potential impact to pedestrians, parked cars, workers and other public and private property. Protection measures shall be required for all on-site tree care activities including but not limited to Supersonic Airtool excavation, root pruning, canopy pruning, etc.

E. Maintenance Prescription: Upon completion of the Work the Contract Arborist shall submit a tree by tree matrix for itemizing remedial and restorative care of each trees as a result of construction, changes in weather patterns or events, and response in health from individual trees. Materials and methods outside this specification shall be defined and listed. This prescription shall include one year duration. .

F. Soil Samples: Submit soil samples for analysis during site work phase of this project. Take the samples during April through October. Take representative soil samples from all areas of protected trees (landscape areas and street tree planting pits). Samples and procedures per local cooperative extension shall be followed. Forward reports to Engineer and Project Arborist.

G. Soil Amendments: Contract Arborist shall submit specific fertilizer formulations, application rates and methods for review by Project Arborist. All fertilization and soil amendments shall be in conformance with soil test results.

H. Site Documentation: Submit weekly reports to owner and Project Arborist containing complete documentation of all tree impacts and tree preservation activities including but not limited to: root pruning, tree protection fencing, excavation within critical root zones, tree fertilization or other treatments, etc. Documentation shall include tree numbers of trees impacted and/or treated. Complete weekly photographic record is also required.

1.5 QUALITY ASSURANCE

A. On-site Arborist (individual) Qualifications: An arborist certified by the International Society of Arboriculture (ISA) and licensed in the jurisdiction where project is located. All work performed by Contract Arborist including any oversight and documentation work, shall be performed or directly supervised by at least one on-site arborist with these minimum qualifications.

B. Contract Arborist Firm Qualifications:

1. Contract Arborist Firm shall comply with the following:

   a. Established business with documented experience of at least five years.

b. Experience working on a minimum of three commercial, nongovernmental or governmental projects where similar tree preservation programs have been successfully implemented.

c. Properly licensed and insured to perform arboricultural work in the jurisdiction where the project is located.

2. Provide names of each individual to comply with the following:

a. Minimum BS degrees in forestry or related field and Certification in ISA.

b. Resumes should reflect combined 10 years full time experience on similar tree preservation projects.

c. Provide individual(s) names, certifications, and each anticipated role in this project. “Role(s)” shall be defined as one or more of the following:

Project Manager

Technical oversight

Field Arborist / Technician

3. For each staff member, list a minimum of three construction projects and a minimum three years experience in the following technical applications:

a. Soil amendment prescriptions and applications

b. Supersonic Airtool Excavations for underground utilities exceeding 24” depth

c. Root Protection Matting or similar applications

d. Construction oversight and monitoring on large projects

e. Coordination of arboricultural activities with construction project managers on large projects

C. Publications listed herein are part of this work to extent referenced:

1. ANSI A300 Standard Practices for Trees, Shrubs, and Other Woody Plant Maintenance

2. Part 1-2001, Tree Pruning;

3. Part 2-3004, Fertilization;

4. Part 3-2000, Cabling, Bracing, Guying of Established Trees;

5. Part 4-2002, Lightning Protection Systems.

6. ANSI Z133.1 - 1994 and most recent updates, Tree Care Operations - Safety Requirements

D. Fertilizer and pesticides will be applied in strict accordance with the manufacturers label instructions and applicable federal, state, and local requirements. Fertilizer, soil conditioners, and pesticide applications must be approved by the owner prior to application. Material Safety Data Sheets (MSDS) will be available for fertilizers and pesticides in the Contract Arborists' possession while on the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Temporary Root Protection Matting: geocomposite material comprised of a tri-planar geonet structure with thermally bonded nonwoven geotextiles on both sides.

1. Material shall be Tenax RoaDrain™, Tenax Tendrain II 770-2, PRESTO GEOWEB Tree Protection Matting, or approved equivalent.

2. For short duration applications (1-2 pass/1 day or less), AlturnaMATS® or 1" thick steel plates may be used in lieu of RPM.

3. Submit shop drawings / cut sheets and material samples for review by Project Arborist and project civil.

B. Temporary Trunk Protection Wrap: to provide specific protection to tree trunks when construction activities are expected to be in close proximity.

1. Material shall be Tenax RoaDrain™, Tenax Tendrain II 770-2, PRESTO GEOWEB Tree Protection Matting, or approved equivalent.

2. Alternative methods and materials may be submitted for review.

C. Temporary Tree Protection Fence

1. Chain-Link Fence: Galvanized steel chain-link fence fabric of 10- 11 gauge wire fabric; 6 feet high; with 1¼-inch- diameter line posts; 2-3/8-inch- diameter terminal and corner posts; with tie wires, hog ring ties, gates, and other accessories for a temporary fence system.

2. Site Fence: Exact specifications per civil specifications.

3. Welded Wire Fence: 48" ht, 14 gauge, 4"x2" galvanized fabric with 6' steel T-posts, metal wire clips, tree protection signs.

4. 2"x4" frame sized to fit over the tree pit, 48" height. Option for covered sides is either WWF mesh stapled to frame or ¾" exterior plywood. The top covered with either WWF stapled and cut around trunk or plywood cut out around trunk. Plywood may be painted at Owner's direction.

D. Woven Silt Tube-three-dimensional tubular sediment control and storm water runoff filtration device typically used for perimeter control of sediment and soluble pollutants (such as phosphorus and petroleum hydrocarbons), on and around construction activities.

E. Wood Chip Mulch

1. Double ground hardwood, aged a minimum 6 months from production, free from deleterious materials. Green chips or mulch not aged at least 6 months shall not be used. No walnut mulch shall be used. Submittal shall include original material source(s), number and type of grindings / chippings, duration of aging, timing of turning /aeration.

F. Hardwood Destructive Borer /Beetle Control: Bifenthrin, such as *Onyx, Astro,* or equivalent. Applied per label.

G. Tree Growth Regulator (*Paclobutrazol*)

1. Paclobutrazol is a compound used to regulate plant growth in such a way as to restrict canopy growth and free stored or produced energy for other uses in the tree. For highly impacted trees, this means more energy may be made available for fibrous root growth (to combat root loss), thicker darker leaves (allowing for increased photosynthesis, and increased drought tolerance), and pest suppression (often an issue with construction stressed trees); among countless other potential benefits. Trade name Cambistat®, Pac-Low PGR, or equal.

H. Soil Care/Soil Amendments

1. Fertilizer and soil amendment selection shall be based upon soil test results and recommendations.

PART 3 - EXECUTION

3.1 TREE PROTECTION AND STRESS REDUCTION MEASURES

A. General

1. Refer to the TPAK for specific measures determined for each tree.

2. Installation/implementation of the following measures shall be performed in the field by an ISA Certified Arborist as provided by the Contract Arborist.

3. All work, substitutions and/or modifications shall be subject to review and approval by the City Urban Forester, Project Arborist and Engineer.

4. All work shall conform to applicable federal, state and local regulations and industry standards.

5. The Contract Arborist shall be responsible for all items in this section.

B. Coordination of Temporary Tree and Plant Protection and Transplants. The work of the Contract Arborist coordination shall include but not be limited to the following:

1. Existing underground utility marker conflicts shall be brought to the attention of the Contractor for resolution. Utilities uncovered as a result of work shall also be brought to the attention of the Contractor.

2. Coordinate necessary survey layout of proposed construction elements in order to provide accurate locations for tree protection measures.

3. Layout location of designated tree protection based upon proposed construction and methods of construction for that area.

4. Site walk with Project Arborist and Site Superintendent to verify location of all tree protection measures prior to execution.

5. Notify Site Superintendent and Project Arborist if construction adjacent to tree protection does not appear to follow specifications or prior agreement or conflicts with tree protection seem eminent.

6. Coordinate with Site Superintendent, Construction Managers, Owner, and Security for access of deliveries, crews, equipment, start up, and clean up of each item of work.
7. Provide "as built" of any change to location of tree protection.
8. Attend progress meetings as requested.
9. Provide submittals as required.
10. Notify Superintendent and Project Arborist of any breach or damage to tree protection requiring attention

C. Tree Removal Methods:

1. All trees and shrubs or hedges designated for removal shall be marked in red for review and approval by Engineer.
2. All trees designated for removal, shall be taken down sectionally, or directionally felled to minimize damage to adjacent tree canopies or root systems by a qualified Contract Arborist. Gouges in turf from impacts shall be filled with topsoil and seeded at the direction of the Owner. Damage to adjacent trees shall be reviewed by Project Arborist and Owner for remedial recommendations or replacement.
3. All work shall be done by hand, bucket truck or crane operated equipment.
4. Motorized equipment shall operate on existing pavement and not enter tree preservation areas without prior approval. Temporary root protection matting may be required for such access to prevent rutting and compaction.
5. Stumps shall be ground to 8" below grade and grindings raked and removed from site; backfill holes with approved topsoil and mulch or seed per Owner. Coordinate with underground utilities locators prior to grinding. All stump grinding shall be performed by the Contract Arborist.
   a. For tree pits where a new tree is proposed, the stump may be ground out completely (as determined by the Contract Arborist) to allow the proposed tree to be planted. Backfill as above.
   b. Only trees with stumps within deep excavations may have stumps removed by excavator. Stump excavation to be performed by Site Contractor and under the direct supervision of the Contract Arborist.
6. Removal of shrubs and hedges designated for removal for each phase shall be cut and stumps ground out or hand dug to remove stumps. Prior to removal, verify with Engineer.
7. Remove all wood debris from site promptly. All wood debris shall be removed by each day unless directed otherwise by Owner.

D. Pruning and Supportive Cabling

1. Specific canopy pruning for tree health, risk reduction, and construction clearance per Plan documents.
2. Size, health, species, and impact from proposed construction will be taken into consideration in determining pruning type for each designated tree. Risk Reduction Pruning will remove dead, dying, and declining limbs 2" diameter and

larger. No interior green branching including sprouts will be removed unless approved by Project Arborist.

3. Contractor, Contract Arborist, and Engineer shall meet at site to determine overhead clearance conflicts between trees and construction equipment/activities to prevent breakage, impacts, or aesthetic concerns. Project Arborist may be consulted if questions arise.

4. All work shall conform to ANSI A-300 arboricultural standards. An aerial assessment shall be made for all trees climbed to report any structural weakness of concern to the Project Arborist and Owner.

5. Prior to climbing any tree a risk assessment will be performed using visual, sounding, or basic drilling as needed by the Contract Arborist. Trees deemed high risk should not be climbed; alternative methods should be used and the tree reported to the Project Arborist and Owner immediately.

6. Supportive Cabling of weak unions may be recommended by the Contract Arborist if the need is discovered during pruning operations. ANSI Standards apply. Cabling may be included only if submitted to the Engineer and Add Alts approved by the Owner.

7. Root Prune

   a. Purpose of the root pruning is to provide a more suitable cut so as to not rip or tear roots during excavations and grading with standard construction equipment. The exact location and depth along the LOD or edge of utility excavation will be determined during the layout by an ISA Certified Arborist.

   b. Root Pruning for urban sites with specimen trees or for transplanting requires the use of SSAT excavation for hand pruning. Refer to SSAT specifications in this section.

   c. Sufficient moisture is necessary for reducing the level of dust, increase work efficiency, and provide a hospitable environment for the tree roots and pedestrians.

   d. At a pre-work site inspection by the Contract Arborist more than 72 hours in advance of work start, subsurface probing to 24-36” with a tile probe or similar method will determine if sufficient soil moisture exists. If sufficient moisture is not found, immediate coordination with the site managers shall be made to irrigate the proposed work areas. Methodology may be soaker hose, sprinklers, soaker cans with small drilled holes to release water slowly or other methods. A second follow up inspection shall be made to determine final sufficiency to begin.

8. All root pruning operations shall be performed by the Contract Arborist and directed in the field by an ISA Certified Arborist with documented experience in similar SSAT excavation and root pruning.

E. Temporary Tree Protection Fence

1. Type and placement of fence to be designated on Plans and Details.

2. Attach tree protection area signs @ 30' spacing facing construction LOD. For fence lower than 6’ in height, attach minimum 3 strips glow-flagging 2' long for each fence panel. For single tree protection fence around tree pits use a minimum of two signs, one facing the street and one facing the sidewalk.

3. Tree protection area signs shall be high visibility and all weather to last the duration of the project / phase. Phone number of responsible contact person shall be included on sign.

4. Install after root pruning if shown, and prior to demolition, clearing & excavation.

5. Install at 6”-12” outside (construction side) of the Root Prune line or within the Root Prune trench.

6. Silt fence will be outside (construction side) the tree protection fence, unless super silt fence is used in lieu of tree protection. Trenchless installation method shall be employed per Detail if Root Protection Matting is designated.

7. Exact placement of fence will be determined in walk through with Contractor, Project Arborist, Contract Arborist, Engineer and Owner.

8. Sequencing of the tree protection fence will be determined during the initial site walk. In any case, no construction activities shall occur in each phase or section until approved protection is installed.

9. For all tree pit boxes, care shall be taken to reduce pedestrian injuries from protruding nails, screws, wires, or wood splinters. For plywood boxes the top edges and upper sides may need to be rough sanded to reduce splintering. Plywood may be painted upon direction of Owner, for instance safety orange for visibility or green.

F. Root Protection Mat (RPM)

1. The purpose of the RPM is to reduce compaction, rutting, and contamination of soils and root systems of trees to be retained should staging, temporary stockpile, or equipment access be required within the CRZ areas due to extreme site constraints.

2. RPM shall be used for all access within CRZ areas of trees to remain. Matting is not required where existing pavement or concrete will remain undisturbed.

3. Trees anticipated receiving temporary or repetitive materials staging, footing traffic, or equipment access within protected root zone are to receive RPM. Wood chip mulch 4-6" shall be installed under matting to further protect soils and roots.

4. If short duration access is needed, such as one day or less, the use of "AlturnaMATS", 1" steel plate, or approved equal may be needed to avoid rutting and compaction. These materials may be shifted and re-used as work progresses.

5. All-weather staging, stockpile, or other repetitive construction operations may require 12” stone layer over RPM to allow heavy vehicles have the potential to cause dynamic compaction yet without rutting original surface soils and roots. In this situation, the stone may be contained by silt fence or super silt fence where adjacent to or within a TPA.

6. All temporary RPM areas to be used beyond a single day or beyond continuous on site supervision of the Contract Arborist shall be surrounded by temporary tree

protection fence as per specifications. For temporary staging of soils beyond 24 hours "trenchless" silt fence fabric shall be installed on the lower / downhill side or as directed by the Project Arborist.

G. Temporary Tree Trunk Protection Wrap

1. Temporary trunk protection to cover the root flare and up to 12' height, or to the scaffold branches, or as determined for the situation.

2. Tree trunk shall be wrapped with geocomposite material. More than one layer may be installed to reach suitable protection from the equipment or operations designated for work in the area. Attach with banding or strong tape that will not girdle the tree during the project timeframe. No nails or other devices are to penetrate the trunk.

3. Wrap shall be removed promptly after construction is complete.

H. Hand Excavation within Tree Protection Areas

1. For excavation within CRZ areas of trees to remain, the intent is to protect roots and minimize root damage from excavations.

2. Excavation shall be performed using SSAT, hand tools (shovels, etc), or other approved non-damaging method. Roots shall not be damaged by the excavation.

3. Refer to "Supersonic Airtool Excavation" and "Construction Oversight by Arborist" specifications in this section for additional requirements.

4. All work shall be directly supervised by ISA Certified Arborist (provided by the Contract Arborist) in collaboration with the Owner's trades and sub contractors.

5. If excavation occurs outside paved/hardscape areas, RPM shall be installed along trench sides to allow for temporary soil stockpile and access.

6. Preliminary investigation for roots is required for each lateral excavation as shown on the plans prior to any excavation for the utility itself. If roots are discovered, proceed as follows. If no roots are found, excavation may proceed using conventional methods.

7. Excavate along the edge of the proposed trench closest to the trees to be protected as shown on the plans. Roots shall be uncovered and care taken to avoid damage to roots and bark.

8. Roots 1" and larger shall be protected during utility installation. Larger roots may only be cut by the Contract Arborist if no alternative is deemed possible and Contract Arborist judges the tree impact to be acceptable. Any larger roots to be cut shall be documented including photographs and justification for cutting. Smaller roots may be cut by the Contract Arborist. No roots may be cut by the contractor.

9. If no roots over 1" in diameter are located within the area of the proposed utility trench, the Contract Arborist shall prune the roots and the contractor may proceed with conventional excavation methods. Excavation shall not extend beyond the line where roots were pruned.

10. If roots over 1" in diameter are uncovered, they should be protected to the greatest extent possible. Contract Arborist shall determine if specific roots of this size can

be cut. Roots that are not cut shall be protected and the utility excavation shall continue with hand excavation methods.

11. Roots over 3" in diameter are critical and shall not be cut without approval from the Engineer and Project Arborist.

12. Tradesmen and subcontractors shall carefully insert conduits and cable under or between roots with guidance from ISA Arborist (provided by the Contract Arborist). Carefully backfill as specified per utilities standards

13. Contract Arborist shall employ clear plastic sheeting or equivalent in order to prevent drying of roots exposed longer than 24 hours and/ or in high temperatures or dry soils. Root mister may be necessary to apply supplemental water to exposed roots under sheeting.

14. Protected roots shall be backfilled with clean fill, free of rocks and debris.

I. Supersonic Airtool Excavation

1. Refer to "Hand Excavation within Tree Protection Areas" specification in this section for additional requirements.

2. At a minimum, all SSAT work shall include the use of a barrier system such as temporary walls or tents to protect property and pedestrians from flying debris.

3. Excavate along the edge of the proposed trench closest to the trees to be protected as shown on the plans. Roots shall be uncovered and care taken to avoid damage to roots and bark.

4. Excavation shall proceed per the "Hand Excavation within Tree Protection Areas" specification in this section.

J. Wood chip mulch

1. Mulching for the duration of construction for protection and stress reduction. Mulching will increase moisture-holding capacity, minimize soil compaction, and increase needed organic composition.

2. For individual trees designated on the TPAK within the TPA or curvilinear TPA install mulch to a radius equal to trunk diameter inches equated to mulch ring diameter in feet (24" trunk diameter = 24' diameter mulch ring). Where planting pit areas are restricted by hardscape, mulch the greatest area possible.

3. For privately owned trees, any installation is contingent upon receipt of owner's permission. Owners may decline.

4. For linear TPAs along LOD Install mulch strips a minimum 10' wide the length of critical root zones along the outside of the LOD/ Root Prune line (just inside the Tree Protection Zone) for designated significant trees impacted by proposed construction.

5. Motorized equipment shall not enter the TPA unless specifically approved by the Project Arborist and specific conditions met (RPM, AlturnaMATS, etc). Any such motorized equipment shall be operated by a certified arborist while inside the TPA.

6. Do not allow mulch to contact trunk/ root flare.

7. Mulch depth shall be 3" – 4".

K. Tree Growth Regulator (*Paclobutrazol*)

1. Paclobutrazol is a compound used to regulate plant growth in such a way as to restrict canopy growth and free stored or produced energy for other uses in the tree. For highly impacted trees, this means more energy may be made available for fibrous root growth (to combat root loss), thicker darker leaves allowing for increased photosynthesis, and increased drought tolerance.

2. Specific methods and dosages are contained on the label and are determined by size and species, and applied by a state licensed pesticide applicator. Designated trees are shown on the TPAK.

L. Supplemental Watering

1. This action is for high impact trees of significance during seasonal drought times of project construction. Based upon the number and size of trees various strategies can be considered to maintain adequate soil moisture during these times. These strategies may include but are not limited to the following:

   a. Fire hydrant connection battery powered timer and drip irrigation hose / tubing

   b. Water tank trunk and hand applied as directed;

   c. Temporary above grade poly tank with battery-powered timers for drip or soaker hoses at each TPA.

   d. 30-50 gallon watering cans with 6-8 drilled holes in bottom to allow slow seeping of water; spacing and rotation to reach desired gallons. Equivalent means of effectively watering trees as approved by Engineer or Project Arborist

2. Trees requiring this treatment are indicated in the TPAK. Other trees will not receive this treatment.

3. Drought times shall be defined as:

   a. Periods during the growing season of two weeks or longer, where daytime high temperatures reach 80 degrees Fahrenheit or higher and less than ¾" rainfall is recorded per week. Or,

   b. Periods during the growing season designated as "abnormally dry" or "drought" of any severity, by the U.S. Drought Monitor: (http://droughtmonitor.unl.edu/). Or,

   c. Any period of extraordinary circumstance, as determined by the project arborist or engineer.

4. A prescription for the number of gallons and strategy for watering designated trees will be developed. Large mature trees with impacts to root systems require as much as 100- 250 gallons per week during 90 degree days during summer drought times.

5. Periodic inspections by an ISA Certified Arborist (provided by the Contract Arborist) at this time are critical. Depth of moisture in soils shall be determined by soil sample tube or other exploratory means.

6. Minimum watering shall be considered to be 6 applications per growing season typically July thru October with the exact timing and duration to be determined by the ISA Arborist in conjunction with the Engineer. Additional unit costs per watering designated trees at prescribed rates one time.

M. Tree Condition Monitoring

1. An ISA Certified Arborist (provided by the Contract Arborist) shall perform monitoring twice per month year round to monitor insects, disease, soil moisture levels, weather, and health changes on all trees designated on Tree Protection Action Key.

2. The monitoring will include a report that details problematic areas that have been addressed, treatments provided to reduce the problem, and anticipated treatments forecast for 30 days. This report will be forwarded to the Project Arborist, Engineer and Owner for documentation.

3. Any treatments recommended by the Contract Arborist not already included in the project scope shall be noted in the reports for review by the Project Arborist, Engineer and Owner. No additional work is to be performed unless approved in writing by the Owner.

N. Construction Oversight by Contract Arborist

1. Any work within CRZs of retained trees shall be directly supervised by the Contract Arborist. Work may include, but not be limited to, test pits, lateral installation/connection excavations, abandonment/plugging excavations, staging/stockpiling, etc. Specific areas are shown on the plan drawings.

2. For areas where traditional root pruning is completed or where no roots are found, excavations may proceed using conventional methods. Arborist Oversight shall be periodic after initial tree related issues are addressed.

3. Bore pit excavations do not require on-going oversight after initial root pruning and overhead clearance issues are addressed.

4. If roots are encountered during excavations, work shall progress as directed by the Contract Arborist. Contract Arborist, in coordination with the construction and design teams, shall determine appropriate means and methods to address the roots. Options may include, but not be limited to, severing the roots, hand or SSAT excavation, directional or conventional boring or tunneling, or relocation of the utility.

5. Roots over 1” in diameter should be protected to the greatest extent possible. Smaller roots may be hand pruned by the Contract Arborist. Large roots (3” diameter) shall not be cut except with specific approval by the Project Arborist and Engineer.

6. Refer to “Hand Excavation within Tree Protection Areas” specification in this section.

7. All work shall be documented thoroughly, including photo documentation. Refer to site documentation submittal requirements.

O. Special Sidewalk Demolition and Replacement (SSDR)

1. Sidewalks within CRZ areas to be removed shall be removed under direct supervision of the Contract Arborist. Site preparation and replacement shall also be supervised by the Contract Arborist.

2. No mechanized equipment shall enter the SSDR areas. All work shall be either done by hand (with hand-operated equipment such as jackhammers) or with equipment staged outside the sidewalk and CRZ area (within the existing roadway). Alternatives for specific situations shall be reviewed by Project Arborist and Engineer.

3. Sequence of work shall be reviewed and coordinated with the work of the contract arborist by the construction manager, contractor, contract arborist, project arborist, engineer, and owner as appropriate for the project. Methods of protection of overhead branches, trunks, and roots shall be reviewed. Refer to specifications for approved methods of temporary wrapping, or selective pruning.

4. All equipment shall operate upon existing paving or upon designated root protection matting. All staging or stockpiling of materials shall occur upon existing paving or upon designated root protection matting.

5. Demolition of paving shall not damage protected roots outside the limit of work nor below existing paving. Approved options include jackhammer and pick up by hand or break up by small excavator operating upon paving. Once paving is removed, no equipment shall operate upon stone base unless inspected and approved by arborist as roots may have grown into base below paving. If roots are discovered within the stone base, a review of alternatives for base removal shall be made with the contract arborist, project arborist, engineer, contractor, construction manager, and design team. Alternatives may include supplementing existing base with stone and geogrid as approved by geotechnical specialist; exposure and protecting key roots by the arborist using hand tools or SSAT; pneumatic decomposition of the base soils containing roots by the arborist using SSAT prior to repaving work.

6. Excavation for base preparation shall not damage tree roots, trunks or branches. Areas shall be assessed for overhead clearance prior to commencement. Excavation for site preparation shall be done by SSAT or by hand.

7. Refer to "Hand Excavation within Tree Protection Areas" and "Supersonic Airtool Excavation" specifications in this section.

P. Overhead Clearance

1. Trees to remain shall be assessed prior to construction for overhead clearance for construction activities. Contract arborist shall recommend either canopy pruning, temporary guying/tying of select limbs, or alternative construction methods.

2. Pruning for clearance shall not remove branches above 14' or over 6" diameter.

3. All pruning proposed by the Contractor and/or Contract Arborist shall first be reviewed and approved by the City Urban Forester, Project Arborist and Engineer.

4. Equipment exhaust should be directed away from trees as much as possible. Stationary equipment shall not exhaust directly under or towards trees.

5. Contractor shall use appropriate equipment near trees to ensure that trees are not damaged by construction. Contractor shall provide any specialized equipment needed at no additional cost to the owner.

6. Any pruning shall also conform to the pruning specifications in this section.

Q. Soil Tests and Soil Care/Fertilization

1. Initial soil testing within tree protection areas is required. Conduct individual soil tests for separate tree protection areas (small adjacent areas may be tested together). Soil test shall be a representative sample from each area. Soil testing shall include a texture analysis (sand, silt, and clay percentages), soluble salts, and sodium tests.

2. Treatments to the tree protection areas for specified trees (see TPAK) shall be based on the results of the soil analysis. Fertilization should be consistent with the recommendations of the ANSI A-300 (Part 2) Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Fertilization) 2004, except as described herein.

3. Application rates shall not exceed a rate of 1 pound of actual nitrogen per 1,000 square feet annually. Fertilizer used should include humic acids, soluble seaweed extracts and soil biological inoculants (mycorrhizal, etc.).

4. Applications to confined areas (i.e. street tree planting pits) should be made by soil injection. In areas where adequate application rates cannot be achieved, injection should be made to the point of refusal.

R. Contractor Damages and Penalties

1. Remedial Measures

a. Any damage caused to the trees by the work of this contract through negligence by the contractor shall be immediately remedied by the contractor. Contractor shall be responsible for any associated costs.

b. Remedial work may include pruning, cabling, or any other measures up to and including removal and replacement, as determined by the Project Arborist and Engineer.

c. Remedial work shall be performed by the Contract Arborist, as approved by the Project Arborist and Engineer.

d. All required remedial work shall be performed to the satisfaction of the Project Arborist and Engineer, at no additional cost to the owner.

2. Tree Replacement

a. If damage to any tree is severe, because of negligence by the contractor as determined by the Project Arborist and Engineer, it shall be replaced with a new tree of equal size caliper and species as that of the damaged tree.

b. If a replacement tree of equal size caliper is not possible as determined by the Project Arborist and Engineer, it shall be replaced on an inch for inch basis with new trees of a minimum caliper size of 2-3".

Replacement trees shall be supplied and installed at no additional costs to the owner, including all incidental costs including the costs of inspection

of the tree at the nursery and any other incidental costs associated with tree replacement.

PART 4 - MEASUREMENT AND PAYMENT

A. When a price is asked for on the proposal form on a lump sum basis, this shall include all the work as described above which may be necessary to properly complete the project. Should the scope of work be increased due to construction changes beyond the requirements hereinabove, any additional work required will be paid for as extra work.

B. Payment for this work will be at the contract lump sum price bid for Item 1513 – Tree Preservation, and shall include all equipment, tools, and labor incidental to the satisfactory completion of the item.

Construction Oversight by Contract Arborist shall be paid at the contract per each man hour for arborist onsite.

SECTION 1516

REMOVE AND RESET BRICK SIDEWALK

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 Work under this Section shall consist of the removal and resetting of existing brick sidewalks disturbed by the proposed construction.

B. The Contractor shall make every effort to reuse the existing brick to the extent possible. Damaged bricks shall be replaced as directed by the Engineer.

PART 2 -PRODUCTS

A. Brick shall conform to Article M.11.03 of the CTDOT Standard Specifications Form 818. The color shall match the existing brick as close as possible. The Engineer shall determine if the replacement bricks are acceptable.

PART 3 -EXECUTION

A. The Contractor shall carefully remove the existing bricks to allow for the proposed work. The existing bricks shall be stored in a safe location for reuse. Damaged bricks shall be disposed of and replaced with a new brick of equal manufacture, style, dimension and color as determined by the Engineer.

B. The Contractor shall determine and record the existing pattern, brick dimensions and bedding methods for future replacement. Sufficient time shall be allowed for obtaining any replacement brick materials.

C. The Contractor shall replace the brick sidewalk upon completion of the proposed work. The brick shall be placed in the same pattern as the existing brick and installed on the same base course to match the existing walk. The Engineer shall make the final determination of whether the replacement walk matches the existing.

PART 4 -MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. The removal and replacement of brick sidewalk shall be measured by the square foot of existing sidewalk replaced to the satisfaction of the Engineer. The Contractor shall minimize the amount of existing walk removed and the limits shall be determined by the Engineer.

B. The Contractor shall be paid at the Contract unit price bid for "Remove and Reset/Replace Brick Sidewalk". The unit price shall include the careful removal of the existing bricks, the

storage of the salvaged bricks, the replacement of any damaged bricks with new bricks equal to the existing material and dimensions, the furnishing and installation of any required bedding material, compaction of base, the installation of the existing and/or new brick, the furnishing and installation of any required mortar or sand for the joints, and any equipment, tools, labor and materials to restore the brick sidewalk to match the existing to the satisfaction of the Engineer.

Item Number	Pay Item	Pay Unit
1516	Remove and Reset / Replace Brick Sidewalk	SF

SECTION 1518

REMOVE AND RESET CONCRETE PAVER SIDEWALK

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 Work under this Section shall consist of the removal and resetting of existing concrete paver sidewalks disturbed by the proposed construction.

B. The Contractor shall make every effort to reuse the existing concrete pavers to the extent possible. Damaged pavers shall be replaced as directed by the Engineer.

PART 2 -PRODUCTS

A. Concrete pavers shall conform to Article M.10.03 of the CTDOT Standard Specifications Form 818. The color shall match the existing pavers as close as possible. The Engineer shall determine if the replacement pavers are acceptable.

PART 3 -EXECUTION

A. The Contractor shall carefully remove the existing pavers to allow for the proposed work. The existing pavers shall be stored in a safe location for reuse. Damaged pavers shall be disposed of and replaced with a new paver of equal manufacture, style, dimension and color as determined by the Engineer.

B. The Contractor shall determine and record the existing pattern, paver dimensions and bedding methods for future replacement. Sufficient time shall be allowed for obtaining any replacement paver materials.

C. The Contractor shall replace the concrete paver sidewalk upon completion of the proposed work. The pavers shall be placed in the same pattern as the existing pavers and installed on the same base course to match the existing walk. The Engineer shall make the final determination of whether the replacement walk matches the existing.

PART 4 -MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. The removal and replacement of concrete paver sidewalk shall be measured by the square foot of existing sidewalk replaced to the satisfaction of the Engineer. The Contractor shall minimize the amount of existing walk removed and the limits shall be determined by the Engineer.

B. The Contractor shall be paid at the Contract unit price bid for "Remove and Reset Concrete Paver Sidewalk". The unit price shall include the careful removal of the existing pavers,

the storage of the salvaged pavers, the replacement of any damaged pavers with new pavers equal to the existing material and dimensions, the furnishing and installation of any required bedding material, compaction of base, the installation of the existing and/or new pavers, the furnishing and installation of any required mortar or sand for the joints, and any equipment, tools, labor and materials to restore the concrete paver sidewalk to match the existing to the satisfaction of the Engineer.

Item Number	Pay Item	Pay Unit
1518	Remove and Reset Concrete Paver Sidewalk	SF

SECTION 1521

BIOSWALES

PART 1 - GENERAL

1.01 SUMMARY

A. Under this item the Contractor shall do all work necessary to construct bioswales for planting in specified sizes.

B. A bioswale is a modified planting area or tree pit designed to store and infiltrate stormwater runoff from surrounding impervious surfaces within the right of way. Bioswales are designed to reduce the volume of stormwater that is entering the combined or separated sewer system. A bioswale will take in stormwater through a curb cut inlet. Once stormwater enters the bioswale it will infiltrate until saturation of the sub-grade at which point the additional stormwater will be released through overflow pipe, where indicated.

C. Work under this item shall be performed to required depths within the planted footprint of the bioswale only. Work includes removal of existing trees and stumps in the designated planting pit, saw cutting and removing the existing sidewalk within planted area footprint, fence supports and fencing, resetting curb, repair of roadway, concrete apron in road to direct flow, sawcutting of road, granite curb inlet, patching in curb around inlet, excavation to full pit depth, installation Granite Curb Edging, Gabion, Non-Woven Geotextile, Three Sided Enclosure Fencing, furnishing, mixing, and placing Open Graded Stone Base and Engineered Soil in all excavation areas, installation of plantings and peastone, as well as all incidental work necessary to complete work under this item. All work shall be in accordance with the plans and specifications to the satisfaction of the Engineer.

D. The Contractor shall be liable for any damage to property caused by operations and related work, and all areas and construction disturbed shall be restored to their original conditions to the satisfaction of the Engineer.

PART 2 - PRODUCTS

2.01 Unless otherwise herein specified, all materials and methods of construction shall comply with the project manual, and the GNHWPCA Standard Specifications.

2.02 OPEN GRADED STONE BASE

A. All materials for this work must comply with the State of Connecticut Department of Transportation - Form 818, Standard Specifications Pervious Structure Backfill SectionM.02.05.01 for Broken or Crushed Stone. The material must meet gradation AASHTO No. 57 (3/4" crushed stone) and be washed and free from dirt and debris.

B. The Contractor assumes responsibility for any contamination of any part of this base material during construction and shall, at his/her own expense, remove all portions of the base which do not conform to the requirements of these specifications and replace with specified material.

2.03 PEASTONE

A. The material must meet gradation No. 8 (3/8") as according to State of Connecticut Department of Transportation - Form 818, Gradation of Aggregate Section M.01, be rounded in shape, and be washed and free from dirt and debris.

B. The Contractor assumes responsibility for any contamination of any part of this stone material during construction and shall, at his/her own expense, remove any and all portions of the stone which do not conform to the requirements of these specifications and replace with specified material.

2.04 GABION

A. Gabions provided for bioswales shall be lined with the specified geotextile and filled with a combination of ¾-inch washed stone and river stone. Gabion shall have an open bottom with no geotextile, however the sides of the gabion shall be lined with a geotextile and filled with ¾-inch crushed stone to the soil level. At the soil level, a geotextile shall be provided on top of the 3/4-inch crushed stone to prevent fines from filling the voids in the 3/4-inch crushed stone. The remaining 4-6-inches of the gabion above the soil level shall be filled with crushed or rounded stone at least 3 to 6 inches in size and be washed and free from dirt and debris, and no geotextile.

B. The Contractor assumes responsibility for any contamination of any part of this stone material during construction and shall, at his/her own expense, remove any and all portions of the stone which do not conform to the requirements of these specifications and replace with specified material.

2.05 ENGINEERED SOIL

A. Description

1. Engineered Soil is a soil mix that promotes infiltration. The Engineered Soil must consist of 80-85% coarse sand, 10-15% topsoil, and 2-5% bark or wood fiber mulch. The Engineered Soil shall have an organic content between 3% and 8%. The Engineered Soil must contain no more than 5% fines (material passing through a sieve size of 200). The table below summarizes the components of the Engineered Soil.

Engineered Soil components	**Percent of each component (by volume)**	**Gradation of Material**	
		Sieve Size	Percent Passing
Coarse Sand	80-85%	See "Coarse Sand" section below	
Topsoil	10-15%	200	15-25%
Bark/Wood Mulch	2-5%	200	5% MAX

2. Engineered Soil must NOT contain any of the following materials: hard clods, roots, clay lumps, stones larger than 1-1/2 inches, concrete slurry, concrete layers or chunks, cement, plaster, building debris, asphalt, bricks, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, solid waste, and any other extraneous materials that are harmful to plant growth.

B. Engineered Soil Components

1. Coarse Sand

a. The coarse sand must be washed and rounded to sub-angular in shape (such as concrete sand). The coarse sand must meet the gradation schedule as shown in the State of Connecticut Department of Transportation- Form 818, Standard Specifications with January 2017 supplement, Aggregates Table M.01.04-1 for Fine Aggregate Gradations as shown below.

Sieve Size	Percent Passing
3/8”	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#100	2-10
#200	0-3

2. Topsoil

a. The topsoil must comply with the State of Connecticut Department of Transportation – Form 818, Standard Specifications Roadside Development Section M.13.01 for Topsoil. The topsoil shall contain 5-20% organic material and have a pH range of 5.5 to 7.0. The topsoil must be a loamy sand based and meet the gradation standard set above (no more than 25% passing through a sieve size of #200).

3. Bark/Wood Fiber Mulch

a. The bark or wood fiber mulch must be made of bark, coniferous, or hardwood trees, moderately fine shredded, of uniform texture, and free of stones, sticks, soil, rot, mold, and foreign or toxic materials. The bark/wood fiber mulch must meet the gradation standard set above (no more than 5% passing through a sieve size of #200.

4. Compost

a. Compost is only to be used as an amendment if the organic matter of the Engineered Soil is lower than 3%. The compost must comply with the State of Connecticut Department of Transportation – Form 818, Standard Specifications Roadside Development Section M.13.06 for Compost

2.06 GEOTEXTILE

A. All materials for this work must comply with the State of Connecticut Department of Transportation - Form 818, Standard Specifications Drainage Section M.08.01.19 for Geotextile.

B. Modification to the 818 includes removal of the sentence, “For each specific use, only geotextiles that are already on the Connecticut Department of Transportation’s Qualified Products List for the geotextile type will be used.”

C. Geotextile shall be ADS Geosynthetics 0401T nonwoven geotextile, Mirafi 140N Nonwoven Polypropylene geotextile, or similar as approved by the Engineer.

D. Geotextile is to be stored and covered such that it is adequately protected from site construction damage, precipitation, ultraviolet radiation, and other conditions that could damage the material as per manufacturer’s recommendations.

2.07 GABION

A. The dimensions of the welded mesh gabion are to be three (3) feet wide by one (1) foot thick by three (3) feet tall. The welded mesh, spiral fasteners, and lacing wire are to have the following parameters:

Welded Mesh

	Unit	Value
Wire Diameter	inch	0.120 (min)
Tensile Strength	PSI	80,000 (min)
Weld Shear	Lbs.	450 (min)/ 548 (avg)
Zinc Coating Wt.	oz/ft	0.85 (min)
Mesh Opening Dimension	inch	3” x 3” (max)

Spiral Fasteners

	Unit	Value
Tensile Strength	PSI	80,000 (min)
Diameter	inch	0.120 (min)

Lacing Wire

	Unit	Value
Tensile Strength	PSI	60,000 (min)
Diameter	inch	0.086 (min)

2.08 THREE-SIDED ENCLOSURE FENCING

A. Three-Sided Enclosure Fencing shall be constructed of concrete bases, posts, caps, chains and accessories as shown on the plans. Three-Sided Enclosure Fencing shall be fabricated in strict accordance with the plans and approved shop drawings. Concrete bases shall use commercially available round forms, cut to size in the field. Concrete bases shall rest on top of the washed crushed stone. The bottom of the forms shall be capped with plastic sheeting and tape or other means approved in the field so the concrete does not migrate out from the bottom of the form into the stone below. Posts shall have a minimum 18" embedment into the concrete base. Post shall, in all cases, be set in concrete bases, truly vertical with the cap 2' above the adjacent sidewalk or ground surface. Chains shall be installed so they have a sag of approximately 5" between posts

and can be field adjustable. Dimensions of individual Three-Sided Enclosure Fencing may vary as required by existing site conditions, in accordance with the plans and direction of the Engineer.

B. All surfaces of the Three Sided Enclosure Fencing posts, caps, chains and accessories shall be powdercoated with an electrostatically sprayed, lead-free, TGIC (triglycidyl isocynaurate) polyester powder coating applied to a minimum of 3 to 4 mils by electrostatic spray process and bake finished per the manufacturer's directions. Powdercoating shall be applied to the thermal zinc or iron phosphate coated metal in such a manner that the coating will not peel off. The manufacturer shall perform all processes required to achieve a smooth material bond. Galvanized chain shall undergo an Electrophoretic Painting Process (E-Coat) prior to powder coating. Ensure surfaces to be coated are clean and dry and free of grease, dust, rust, etc. All surfaces shall first receive phosphating and chromatizing treatments to improve the adhesion of the surface coating. Colors shall be black unless otherwise shown on the drawings. Material surfaces shall be protected prior to shipment so as to arrive mar and scratch free in the field.

C. The TGIC polyester powder coating shall comply with ASTM standards as follows:

PHYSICAL PROPERTIES	**TEST METHODS**	**ACCEPTANCE CRITERIA**
Adhesion cross hatching	D-3359B	5B (0% area removed)
Flexibility conical mandrel	D-522	Pass 3/8" mandrel
Pencil Hardness	D-3363	Pencil hardness 2H minimum
Impact resistance	D-2794	140 inch pounds minimum
Overbake resistance – Adhesion	D-2454	5B
Overbake resistance – Hardness	D-2454	Pencil Hardness 2H minimum
Overbake resistance – direct Impact	D-2454	140 inch pounds minimum
Humidity resistance – 250 hours	D-4585	No visible change to surface
Weatherability	D-822	No visible change to surface

2.09 GRANITE CURB

A. The stone for granite curbing shall be hard and durable granite of light color and uniform texture, neither stratified nor laminated. It shall be free from seams and evidence of weakening or disintegration and shall have good, smooth split faces. The Contractor shall be required to submit to the Engineer for his approval, a sample of the granite curbing he proposes to use and the name of the quarry from which it originates. After approval by the Engineer, no stone from other quarry sources shall be substituted on a project unless specifically approved by the Engineer.

B. The top surface shall be pointed, peen hammered and sawed. The top 8 inches of the face shall be smooth quarry split and free from drill holes. The ends of all stones shall be square with the planes of the top and face, and so finished that when stones are placed end to end as closely as possible,

no space more than 1/2 inch shall show in the joint for the full width of the top or the top 8 inches of the face. If sawed, the curbstone shall be thoroughly cleaned of any iron rust or iron particles. Straight curbing shall be furnished in lengths not less than 6 feet, except that for closures when no piece less than 4 feet in length will be allowed.

2.10 PLANTINGS

A. The material for this work shall conform to the requirements of Section M.13.

PART 3 - EXECUTION

3.01 Sizes of bioswale shall be indicated on the Contract Drawings.

3.02 No bioswale pit shall be dug until the proposed locations are marked by the Contractor, in the presence of the Engineer, with white construction spray paint and the placement of the bioswale identification marker, followed by Call Before You Dig (CBYD) markout by respective utility providers. The Contractor shall then take full responsibility for the bioswale locations. Sites will be evaluated by Engineer after CBYD to determine if it will be constructed or abandoned.

3.03 Contractor shall apply for and obtain necessary permits (e.g., City of New Haven Excavation Permit), pay fees and post bonds associated with the work prior to the start of construction.

3.04 The Contractor shall be required to place a notice at each site when CBYD marks out the site. The notice shall include the Bioswale Number, a call-in number for the project, and an email address for information.

An example of this notice is shown below:

Proposed Bioswale – NASH BIO-01

Detail of Bioswale

EXAMPLE PHOTO OF BIOSWALE

For additional information you may call or email: 860-646-2469 x5319
engineering@teamdtc.com
engineering@gnhwpca.com

CBYD Notice Example (Minimum Size 24” x 18”)

3.05 The Contractor shall install the maintenance and protection of traffic pattern and temporary fencing to protect the public prior to start of excavation. The Contractor shall remove all materials from the bioswale pit for the full length, width, and depth specified. Extreme care shall be taken not to excavate to a depth greater than required. The subgrade shall be tamped slightly to prevent settlement. Settlement will not utilize materials at the bottom of excavation but from engineered soils. Excavation shall be calculated to neat lines.

3.06 Each specified location must follow the appropriate traffic pattern as shown in 2014 New Haven Work Zone Traffic Patterns attached in this document. 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."

3.07 The Contractor shall support and protect all existing underground utilities exposed when trenching during the installation of bioswales including storm, sanitary, gas main and lateral piping, electric utilities, telecommunications, traffic signal system and lighting, cable and/or any associated 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.

3.08 The Contractor shall saw cut and remove concrete sidewalk where indicated on the plan for the installation of the bioswale. There will be no separate payment for saw-cutting and removal of sidewalk, the cost of which shall be included in the unit price for "Standard 15' x 5' Bioswale With Granite Curb Edging" and "Standard Bioswale Bump Out".

3.09 There will be no separate payment for Backfill and Compaction, the cost of which shall be included in the unit price bid for "Standard 15' x 5' Bioswale With Granite Curb Edging" "Standard Bioswale Bump Out", and other items of work.

3.10 All excavated materials shall be removed from the site and disposed of by the Contractor. No bioswale pits shall be backfilled until approved by the Engineer. All bioswale pits are to be closed and filled with approved backfill layers as per the detailed drawing. Area is to be made secure and safe at the end of workday.

3.11 Where subsurface obstructions are encountered during excavation, at the direction of the Engineer, the Contractor shall restore the disturbed area to its original condition. A new location shall be designated by the Engineer, if conditions permit.

3.12 When excavation and backfilling are completed and the bioswale pit is abandoned due to no fault of the Contractor, a new location may be designated by the Engineer if conditions permit. However, the Agency is under no obligation to designate an alternate location.

3.13 SHEETING

A. Wherever necessary to maintain the banks of excavation or support curbs, sidewalks and other structures to remain in a safe and stable condition the Contractor shall furnish and install temporary sheet piling or planks, braces and shores of good sound timber of adequate strength and shall remove such piling or sheeting as the work progresses.

B. All work shall meet or exceed the requirements of Title 29 Code of Federal Regulations Part 1926, Safety and Health Regulations for Construction.

C. The type of sheeting and bracing shall be satisfactory to the Engineer and subject to his approval, but the approval by the Engineer of a method to be used does not relieve the Contractor of his responsibility for protection and safety.

D. The foregoing shall include the construction and removal of sheeting and bracing, the excavation and maintenance of temporary ditches, and the furnishing and operation of pumps or other appliances needed to properly drain the work. No additional payment will be made for this work, but payment therefore shall be deemed included in the cost of this item.

E. After areas and trenches have been excavated and structures constructed therein, the spaces around and above them shall be carefully backfilled with acceptable material. Backfill shall be placed on both sides of structures to approximately the same elevation at the same time. All backfill shall be placed in a manner that causes as little compaction as possible. If compaction occurs, soil shall be decompacted at no additional cost. If directed by the Engineer, the backfill shall be thoroughly saturated with water as it is placed.

F. Backfill adjacent to foundation walls shall be pneumatically compacted.

3.14 OPEN GRADED STONE BASE

A. Material shall be evenly spread on a prepared sub-grade in the position shown on the plans or directed by the Engineer, to the thickness shown on the plans or as directed by the Engineer.

3.15 GEOTEXTILE

A. Geotextile to be placed per drawing and/or direction of the Engineer. All seams shall be overlapped approximately six (6) inches. No equipment, materials or machinery shall be placed on or be transported over exposed fabric. Stone shall be carefully placed to prevent dislocation of the fabric.

B. If the fabric is damaged during installation, the rupture shall be removed, and the damaged area shall be covered with a patch of new fabric which will overlap the undamaged fabric approximately six (6) inches in all directions. All repaired fabric surface costs will be deemed part of the price bid.

3.16 ENGINEERED SOIL

A. Engineered Soil shall be spread to the depths specified. Placement of Engineered Soil shall be performed only when it can be followed within five (5) days by planting. If placement of Engineered Soil must occur outside the planting season and it is deemed necessary by the Engineer, all exposed soil surfaces shall be covered in Jute Mesh and both the inlet and outlets for the bioswale shall receive Temporary Inlet Protection.

B. Prior to procurement of Engineered Soil and starting delivery of soil, all approvals for those items required in Section entitled "SUBMITTALS" must have been given in writing to and accepted by the Engineer.

C. Engineered Soil shall be evenly placed to the thickness and configuration as directed by the Engineer or as shown on the plans. Engineered Soil shall not be placed when the subgrade or Engineered Soil is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to the proposed seeding, planting or soil structure.

D. The material delivered to the site shall be visually and continuously inspected by Engineer during construction to ensure that it is consistently the same material previously approved and delivered

to the site. If changes in material occur, soil delivery shall cease immediately, and the Contractor shall not incorporate the new material into the work until the material meets these specifications. The Contractor shall test the new material as a new source and submit his results to the Engineer for his/her approval as outline above. If the Engineer rejects the material, the Contractor shall immediately remove the material from the project site at no additional cost.

E. After Engineered Soil placement and final grading, no heavy equipment, pickup trucks, or other construction vehicles shall be permitted to travel on these completed areas. The Contractor shall, through mechanical raking and hand grading with rakes and shovels, grade all areas around fences, pipes and other structures in preparation for seeding or planting.

F. The Contractor shall, as part of the Engineered Soil spreading operation, mechanically rake and clean all undesirable materials from the Engineered Soil prior to seeding or planting operations. The soil shall be firm prior to seeding operations. The method for this work must be accepted by the Engineer.

G. The Contractor shall dispose of all undesirable materials raked from the Engineered Soil at no additional costs.

H. The Contractor shall pay all costs, fees, etc. to rectify any deficiencies in placement of the Engineered Soil layer, to the acceptance of the Engineer.

3.17 PLANTINGS

A. The work under this item shall consist of furnishing and planting shrubs, perennials, bulbs, and ground cover plants of the type and size indicated on the plans or special provisions. This item also includes the furnishing and placing of peastone surrounding the plant material. It shall also include all incidental operations such as the care of the living plants and the replacement of dead and unsatisfactory plants or unsatisfactory materials before final acceptance of the planting.

B. Methods shall be consistent with the Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 818, Section 9.49.03.

C. Engineered soil needs to settle before planting. Either fully saturate bioswale or wait until a rainfall occurs before planting. Bring engineered soil levels back to grade if necessary. No planting shall be done in frozen ground or when snow covers the ground, or the soil is otherwise in an unsatisfactory condition for planting.

D. Plants received by the Contractor shall be kept moist, fresh, and protected against exposure to sun, wind, and freezing temperatures whether in the receiving yard, in transit, while being handled, or in temporary storage on the site.

E. Layout: Plant material locations shall follow the associated City Standard Drawing NH-44C and/or NH-44C1 or as assigned by the Engineer. Any plant substitutions must be approved by the Engineer.

F. Strict adherence to the location and elevation of soil and plants is critical to the proper functioning of the bioswale. The center of the bioswale should be at an elevation 1 to 3 inches below the elevation of the invert. The overflow invert (gabion overflow) shall be set at the same elevation as the inlet.

G. No additional fertilizers or pesticides are to be applied to any area of this project.

H. Watering: All plants must be watered upon setting and as many times thereafter as conditions warrant. The following is a guide for minimum requirements:

1. Shrubs: 6 gallons each
2. Vines, Perennials, and Ornamental Grasses: 3 gallons each
3. Groundcovers and Bulbs: 2 gallons per square foot

Water must be applied at a controlled rate and in such a manner that does not dislodge plants, erode soil, or cause damage to the root zone of the plant.

I. Peastone Cover: Peastone must be hand placed and spread to a depth of 1 inch over the entire surface area of the bioswale creating a smooth surface of consistent depth that maintains the grading shown in the standard drawings. Care shall be taken not to damage the plants during this process.

J. Warranty: All plant material shall be subject to a Two-Year Establishment Period. During this time, the Contractor shall use currently accepted horticultural practices to keep all plant material installed in a healthy, vigorous growing condition at the date of final acceptance. The date of final acceptance shall be two (2) full calendar years following the satisfactory completion of the planting activities as confirmed by the Engineer.

3.18 SUBMITTALS

A. The Contractor must submit the following documentation twenty-one (21) days prior to the start of construction:

1. Proposed material source, vendor, and material testing data for each of the components (sand, topsoil, mulch) including grain size analysis (ASTM C-136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates preferred) and organic content.
2. A sample, of approximately two gallons in volume, of the each of the Engineered Soil components (sand, topsoil, and mulch) and a sample of the Engineered Soil as mixed, of approximately 5 gallons in volume, indicating the sampling method used and location of sample.
3. Grain size analysis on the Engineered Soil in accordance with the ASTM C-136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates. Engineered Soil must have no more than 5% fines (material passing through a sieve size of 200).
4. Organic matter content of the final mixed Engineered Soil in accordance with the ASTM C 2974 Standard Test Methods for Moisture, Ash, and Organic Matter using loss-by-ignition method. If the percentage of organic matter content is below 3%, then the Contractor may amend the mix with Compost. Proposed material source, vendor, and material data sheet for the compost along with a sample will be required prior to amendment. After amendment is made, the Engineered Soil must be re- tested for organic matter content and grain size analysis.

5. Material information and details for the three-sided enclosure fence.

B. The material delivered to the site must be visually and continuously inspected by the Engineer during construction to ensure the material is consistently the same material previously approved and delivered to the site. The Engineer may request additional testing at any time if it is suspected that the material is not the same as previously approved.

3.19 GABION

A. Gabions shall be installed in accordance with the Contract Drawings as directed by the Engineer.

PART 4 - METHOD OF MEASUREMENT

4.01 Bioswales

A. Each bioswale to be paid for per each shall be measured as a unit. Payment items are complete in place per the details.

B. The price bid shall be a unit price for each bioswale, and includes removal of existing trees and stumps in the designated planting pit, saw cutting and removing the existing sidewalk within planted area footprint, support of existing curbs and sidewalks to remain, fence supports and fencing, resetting curb, repair of roadway, concrete apron in road to direct flow, sawcutting of road, granite curb inlet, patching in curb around inlet, excavation to full pit depth, installation of Granite Curb Edging, Gabion, Non-Woven Geotextile, Three Sided Enclosure Fencing, furnishing, mixing, and placing Open Graded Stone Base and Engineered Soil in all excavation areas, proving overflow pipe to catch basin (as necessary for bump out bioswales) as well as all incidental work necessary to complete work under this item., in accordance with sketches, specifications, and to the satisfaction of the Engineer.

Item Number	Pay Item	Pay Unit
1521.1	Standard 15'x5' Bioswale with Granite Curb Edging and Fencing	Each
1521.2	Standard Bioswale Bump Out	Each
1521.3	Bioswale Bump Out Fencing – Post and Chain with Bases	Each

4.02 Plantings

A. Planting Plan: This work will be measured for payment per each planting plan provided in accordance with the Contract Document details. The Owner reserves the right to specify an alternative plant species of the same type and size at no additional cost to the Owner. Each planting plan layout (i.e., layout for sun conditions and shade conditions) including peastone

cover will be considered one (1) unit for a Standard 15'x5' Bioswale. Each planting plan layout (i.e., layout for sun conditions and shade conditions) including peastone cover will be considered two (2) units for a Standard Bump Out Bioswale.

B. Planting Plan: This work will be paid for at the contract unit price per each planting plan complete in place

Item Number	Pay Item	Pay Unit
949.10	Planting Plan 1- Shade	Each
949.11	Planting Plan 2 - Sun	Each

4.03 Removal of Existing Soil

A. Removal of existing soil to be measured by the cubic yard in place as directed by the Engineer. This item is for the proposed bump out bioswales located at the Lawrence Street/Mechanic Street intersection.

B. Paid for at the Contract Unit price per cubic yard for removal of existing soil for excavation and disposal of earth, as authorized by the Engineer that is measured and accepted. This item also includes materials, equipment, tools and labor incidental to the Work.

Item Number	Pay Item	Pay Unit
1521.4	Removal of Existing Soil	Cubic Yard

4.04 Bioswale Mix

A. Bioswale Mix to be measured by the cubic yard in place as directed by the Engineer. This item is for the proposed bump out bioswales located at the Lawrence Street/Mechanic Street intersection.

B. Paid for at the Contract Unit price per cubic yard completed and in place, as authorized by the Engineer that is measured and accepted and for providing and installing. This item includes materials, equipment, tools and labor incidental to the Work.

Item Number	Pay Item	Pay Unit
1521.5	Bioswale Mix	Cubic Yard

SECTION 1570

REMOVE AND RESET DECORATIVE LIGHT POLE

PART 1 - GENERAL

This article shall consist of removing / disposal of existing decorative light poles and resetting the existing light pole, complete in place on the existing foundation as indicated on the plans, and in accordance with the specifications. Decorative light poles are serviced with underground power, the work shall include the relocation and installation of conduit, wiring, junction boxes, brackets, dampers, grounding wire or other connections required to make the lighting operation equal to the pre-construction condition.

PART 2 - MATERIALS

Pole foundation shall conform to Article 10.02.02.

Conduit shall conform to Article 10.08.

Electrical components shall conform to Section M.18.

Part 3 - EXECUTION

Existing decorative light poles and foundations shall be carefully removed together with all fittings and attachments in such a manner as to safeguard all parts from damage or loss. The Contractor shall replace, at his own expense, the light pole or foundation should it become damaged due to his operations.

Equipment shall be removed in such a manner as to cause no hazard to pedestrians, traffic or property.

Existing concrete foundations shall be removed in accordance with Article 2.02.03. Surplus excavated material shall be disposed of in accordance with Subarticle 2.02.03-8. Wired, cables and conduit shall be disconnected and capped until the new foundation is to be poured, at which time they shall be extended, if necessary, to accommodate the reset base. The remaining hole shall be backfilled with clean fill material which shall be compacted and the ground restored to a grade and condition compatible with the surrounding area.

Construction methods for the new foundation shall conform to Article 10.02.03.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

This work will be measured as separate units.

4.2 – PAYMENT

This work will be paid for at the contact price per Each for "Remove and Reset Decorative Light Pole", complete in place, which price shall include all materials, including but not limited to the relocated foundation and light pole, conduits, wiring, or other material incidental to the work to make the light pole operation equal to the pre-construction condition and all equipment, tools and labor incidental thereto.

Item No.	Pay Item	Pay Unit
1570	Remove and Reset Decorative Light Pole	Each

SECTION 1586

INFILTRATING CATCH BASIN

PART 1 – GENERAL

The work under this Section shall consist of furnishing, preparing, and installing infiltrating catch basins in conformity with the lines, grades, dimensions, and details shown on the plans.

PART 2 – MATERIALS

The materials for this work shall meet the following requirements:

HDPE Perforated Pipe shall be manufactured per ASTM F2648

Concrete Conversion Slab meet the requirements of CTDOT Standard Specifications Form 818 Section M.08.02 and shall utilize concrete with a 28-day minimum compressive strength of 4000 psi.

Mortar shall meet the requirements of CTDOT Standard Specifications Form 818 Section M.08.02 M.11.04.

Granite Curb Inlet shall be in accordance with Detail NH-08F.

Standard Inlet Frame and Grate shall be in accordance with Detail NH-06.

¾" Washed Stone shall meet the gradation requirements specified in Table M.01.02-2 for No. 6 or No. 67 coarse aggregate or a combination thereof.

Geotextile shall meet the requirements of 7.35 and M.08.

PART 3 – EXECUTION

Drainage trench excavation, including rock in drainage trench excavation and backfilling, shall be performed in accordance with 2.86.03 and the requirements of the plans.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved granular fill, thoroughly compacted in lifts not to exceed 6 inches. The Engineer shall be notified prior to removal of the unsuitable material to determine the depth of removal necessary.

When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

Infiltrating catch basins shall be constructed in accordance with the plans and the requirements contained herein for the character of the work involved, (See Corrugated Perforated Pipe Drywell with Granite Curb Detail).

Concrete slabs shall be laid in full mortar beds.

Metal frames shall be set in full mortar beds or otherwise secured as shown on the plans.

Outlet pipes shall be set a minimum 3" from the inside face of the wall of the perforated pipe as shown on the detail. as shown on the plans. The pipes shall extend through the walls for a sufficient distance beyond the outside surface to allow for satisfactory connections.

Backfilling shall be performed in accordance with 2.86.03.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Drainage Trench Excavation: In accordance with 2.86.04, excavation for drainage trench will not be measured for payment but shall be included in the Contract unit price for infiltrating catch basins.

Rock in Drainage Trench Excavation: The volume in cubic yards of Rock in Drainage Trench Excavation will be measured in accordance with the drainage trench excavation limits described in 2.86.03.

Infiltrating Catch Basins will be measured as separate units.

4.2 PAYMENT

Drainage Trench Excavation for the installation of proposed structures described herein will be included in the unit price paid for the respective drainage Contract item(s) for which the excavation is being performed, in accordance with the provisions of 2.86.05.

Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05.

Infiltrating Catch Basins will be paid for at the Contract unit price per each complete in place, which price shall include all excavation, backfill, materials including granite curb inlet, inlet frame and grate, concrete conversion slab, washed stone and geotextile, equipment, tools, and labor incidental thereto.

Item Number	Pay Item	Pay Unit
1586	Infiltrating Catch Basin	EA

SECTION 1599

CONSTRUCTION FIELD OFFICE, (SIZE)

Description: Under the item included in the bid document, adequate weatherproof office quarters with related materials, equipment and other services, shall be provided by the Contractor for the duration of the work, and if necessary, for a close-out period determined by the Engineer. The office, materials, equipment, and services are for the exclusive use of municipal forces and others who may be engaged to augment municipal forces with relation to the Contract. The office quarters shall be located convenient to the work site and installed in accordance with Article 1.08.02. This office shall be separated from any office occupied by the Contractor. Ownership and liability of the office quarters shall remain with the Contractor.

Materials/Supplies/Equipment: Materials shall be in like new condition for the purpose intended and shall be approved by the Engineer.

Office Requirements: The Contractor shall furnish the office quarters and equipment as described below.

Description \ Office Size	Small	Med.	Large
Minimum Sq. Ft. of floor space with a min. ceiling height of 7 ft.	400	400	1000
Minimum number of exterior entrances.	2	2	2
Minimum number of parking spaces.	4	7	10

Office Layout: The office shall have a minimum square footage as indicated in the table above and shall be partitioned as shown on the building floor plan as provided by the Engineer.

Tie-downs and Skirting: Modular offices shall be tied-down and fully skirted to ground level.

Lavatory Facilities: For field offices sizes Small and Medium the Contractor shall furnish a toilet facility at a location convenient to the field office for use by municipal personnel and such assistants as they may engage; and for field offices sizes Large and Extra Large the Contractor shall furnish two (2) separate lavatories with toilet (men and women) in separately enclosed rooms that are p

roperly ventilated and comply with applicable sanitary codes. Each lavatory shall have hot and cold running water and flush-type toilets. For all facilities the Contractor shall supply lavatory and sanitary supplies as required.

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the Authority and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.

Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

Additional Equipment, Facilities and Services: The Contractor shall provide at the field Office at least the following to the satisfaction of the Engineer:

Parking Facility: The Contractor shall provide a parking area, adjacent to the field office, of sufficient size to accommodate the number of vehicles indicated in the table above. If a paved parking area is not readily available, the Contractor shall construct a parking area and driveway consisting of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred, or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel to serve the electrical requirements of the field office, including lighting, general outlets, computer outlets, calculators etc., and meet the following minimum specifications:

A. 120/240-volt, 1 phase, 3 wire

B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.

C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.

D. Additional 120-volt, single phase, 20-amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each computer workstation location.

E. Additional 120-volt, single phase, 20-amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed, for use by the Telephone Company.

F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.

G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120-volt, straight blade.

H. After work is complete and prior to energizing, the municipal electrical inspector, must be contacted.

Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient heating, air conditioning and ventilation equipment to maintain a temperature range of 68°-80° Fahrenheit within the field office.

Telephone Service: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Medium and Large field office this shall consist of the installation of two (2) telephone lines: one (1) line for phone/voice service and one (1) line dedicated for the facsimile machine. The Contractor shall pay all charges.

The following furnishings and equipment shall be provided in the applicable field office size:

Furnishing Description	Office Size		
	Small	Med.	Large
Office desk (2.5 ft x 5 ft) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	1	3	5
Personal computer tables (4 ft x 2.5 ft).	2	3	5
Drafting type tables (3 ft x 6 ft) and supported by wall brackets and legs; and matching drafting stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1	1	1
Office Chairs.	2	4	8
Non-fire-resistant cabinet.	-	-	2
Fire resistant cabinet (legal size/4 drawer), locking.	1	1	2
Vertical plan racks for 2 sets of 2 ft x 3 ft plans for each rack.	1	1	2
Double door supply cabinet with 4 shelves and a lock – 6 ft x 4 ft.	-	-	1
Case of cardboard banker boxes (Min. 10 ea)	1	1	2
Open bookcase – 3 shelves – 3 ft long.	-	-	2
White Dry-Erase Board, 36" x 48" min. with markers and eraser.	1	1	1
Coat rack with 20 coat capacity.	1	1	1
Wastebaskets - 30 gal., including plastic waste bags.	1	1	1
Wastebaskets - 5 gal., including plastic waste bags.	1	3	6
Telephone.	1	1	1
Full size stapler 20 (sheet capacity, with staples)	1	2	5
Desktop tape dispensers (with tape)	1	2	5
Mini refrigerator - 3.2 c.f. min.	1	1	1
Hot and cold-water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.	1	1	1

Microwave, 1.2 c.f., 1000W min.	1	1	1
Fire extinguishers - provide and install type and * number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*	*	*
Electric pencil sharpeners.	1	2	2
First Aid Kit	1	1	1

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project.

First Aid Kit: The Contractor shall supply a first aid kit adequate for the number of personnel expected based on the size of the field office specified and shall keep the first aid kit stocked for the duration that the field office is in service.

Maintenance: During the occupancy by the Authority, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of weekly professional cleaning to include, but not limited to, washing & waxing floors, cleaning restrooms, removal of trash, etc. Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

Method of Measurement: The furnishing and maintenance of the construction field office will be measured for payment by the number of calendar months that the office is in place and in operation, rounded up to the nearest month.

Basis of Payment: The furnishing and maintenance of the Construction Field Office will be paid for at the Contract unit price per month for "Construction Field Office, (Size)," which price shall include all material, equipment, labor, service contracts, licenses, related supplies, utility services, parking area, external illumination, trash removal, snow and ice removal, and work incidental thereto, as well as any other costs to provide requirements of this specified this specification.

Item Number	Pay Unit
Construction Field Office, (Size)	Month

59. APPENDICES

TABLE OF CONTENTS

APPENDIX A

Geotechnical Report

TEST BORINGS &
GEOTECHNICAL REPORT

for

Trumbull Sewer Separation Phase 2 Project
New Haven, Connecticut

prepared for

Diversified Technology Consultants

by

D. Clarence Welti, P.E., P.C.

July, 2013

DR. CLARENCE WELTI, P.E., P.C.

GEOTECHNICAL ENGINEERING

227 Williams Street · P.O. Box 397
Glastonbury, CT 06033-0397

(860) 633-4623 / FAX (860) 657-2514

July 15, 2013

Mr. A. Graham Curtis, P. E.
Chief Operating Officer
Diversified Technology Consultants
2321 Whitney Avenue, Suite 301
Hamden, CT 06518

Re: **Geotechnical Study for Trumbull Sewer Separation Phase 2 Project; New Haven, CT**

Dear Graham:

1.0 Herewith are boring data pertaining to the above. Twenty Seven borings were drilled to a maximum depth of 20 feet below the existing grades. The work covered the following streets: (1) Whitney Avenue from Temple Street north to Humphrey Street (Borings B101-WA to B107-WA); (2)Bradley Street from Orange Street to Whitney Avenue (Borings B111-BS thru B115-BS); (3)Lincoln Street from Bradley Street to Pearl Street (Borings B116-LS thru B118-LS); (4) Whitney Avenue from Bradley Street to Trumbull Street (Borings B119-WA thru B121-WA); (5) Lincoln Street from Bradley Street to Trumbull (Borings B122-LS thru, B124-LS and (6) Pearl Street from State Street to Orange Street (Borings B128-PS thru B133-PS).

1.1 The proposed borings on Orange Street were not drilled due to access problems with traffic and the proximity to existing utilities. Based on the data on Pearl Street and Bradley Street, the soils on Orange Street will likely have a cross section of stratified sand and gravel. The borings were not drilled on Sachem Street, based on a utility company requirement that the drill holes be at least 2 feet of any marked utility. Bedrock is possible at depths less than 6 feet at Sachem Street, based on boring data on Prospect Street.

1.2 *The borings were drilled by Clarence Welti Associates, Inc. and sampling was conducted by this firm solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.*

2.0 The **Subject Project** pertains to storm sewer installation apart from the presently combined system at the above cited streets. The depth of the sewers will be less than 12 feet and most areas less than 8 feet. Of major concerns are the number of shallow utilities in proximity to the proposed

sewers. For example gas, electric and telephone lines are generally within 3 to 4 feet of grade and water lines are usually within 6 feet of grade. The sub grade at trenches in Whitney Avenue may be as deep as 12 feet. The soil over most of the streets will generally be a non- plastic stratified medium compact to compact fine to coarse sand with trace to some gravel and trace to little silt. The OSHA Classification is C, which requires cuts excavations deeper than 5 feet to be cut back to a slope of 1.5Horizontal to 1.0 Vertical; or alternatively be shored. The geotechnical issues apart from the shoring and proximity to existing utilities pertain to sewer underlay, bedding and backfill requirements.

2.1 It is presumed the piping will be RCP type, which does not, under the depths in the subject project, require lateral support as does metal pipe. The under lay should be with at least 6" of 3/8" crushed stone, which should be carried up to at least a quarter of the pipe outer diameter. This will avoid issues with compacting under the pipe. In bedrock the crushed stone bedding should be at least 12" thick. The 3/8" crushed stone will be compatible with the natural sand at the base and specified backfill (as filtering material) and will not require a filter fabric. The backfill shall conform to the following and in most streets will be from on site excavation carried up to the bottom of the pavement section.

Percent Passing	Grain Size
100	3.5
50 - 100	3/4"
25 - 100	No. 4

The faction, passing the No. 4 sieve shall have less than 15%, passing the No. 200 sieve (with washed sieving)

All backfill must be compacted to at least 95% of modified optimum density as achieved by ASTM 1557D.

At trenches in rock cuts the backfill to the top of the rock shall be with 3/8" crushed stone to avoid soil migration into rock fractures.

3.0 The **Geologic Origin** of the natural inorganic soils over most of the subject area is from glacial lake deposits. These deposits consist generally of relatively clean stratified fine to coarse sand. There are localized area on Whitney Avenue and probably on Sachem Street with shallow depths of bedrock with a thin layer of moraine atop the rock.

3.1 The **Soils Cross Section** from the borings was generally as follows:

Whitney Avenue (see borings B101-WA thru B107-WA and B119-WA thru B121-WA, maximum depth of sewer at 12 feet)

Bituminous Concrete to 2.5" to 3.5" atop Concrete to 8.5" to 9.5"; or Bituminous Concrete to 5" to 9"; or Topsoil to 7" to 8"

Fine to coarse SAND, trace to some Gravel, trace to little Silt to 8 to 13 feet, medium compact to dense
Note: Some of these materials maybe FILL or disturbed soils adjacent to existing utilities. Boring B105-WA encountered auger refusal at 8 feet with possible fill (based on relatively low blow counts) above that level.

Stratified fine to medium SAND, trace to little Silt; or fine SAND, some Silt to 8 to 16+ feet, medium compact to dense

Locally (see boring B107WA, at north 100+ feet of Whitney Avenue), Bedrock (Sandstone) was encountered at about 4.5 to 6 feet below grade

Ground water was not evident within the boring depths

Bradley Street (see borings B111-BS thru B115-BS, maximum sewer depth at 8 feet)

Bituminous Concrete 2.5" atop Concrete to 9"; or Bituminous Concrete 1.5 to 6"

FILL; fine to coarse SAND, some Gravel, trace to little Silt, trace Bricks to 2 to 4 feet, medium compact to dense

Fine to coarse SAND, trace to some Gravel, trace to little Silt to 15+ feet, medium compact to dense

Ground water was not evident in the boreholes at the completion of the borings

Lincoln Street (see borings B116-LS thru B118-LS + B122-LS thru B124-LS, maximum sewer depth at 7 feet)

Bituminous Concrete 1 to 4"

Fine to coarse SAND and GRAVEL, trace Silt to about 9"

Locally FILL; fine to coarse SAND, trace to little Silt and Gravel, trace Wood to 2 to 6.5 feet, loose to medium compact

Fine to medium to fine to coarse SAND, trace to little Silt, trace to some Gravel to 8.5 to 10+ feet, medium compact to dense

Locally (see B116-LS and B117-LS); fine SAND, some Silt to 11+ feet, medium compact to dense

Groundwater was not evident in the boreholes at the completion of the borings

Pearl Street (see borings B128-PS thru B133-PS, maximum sewer depth at 12 feet)

Bituminous Concrete to 2.5" to 4"

Fine to coarse SAND and GRAVEL, trace Silt to 9"to 12"

Stratified fine to medium to fine to coarse SAND, trace to some Gravel, trace Silt to 16+ feet, medium compact to dense

Ground water was not evident within the boreholes at the completion of the borings

Orange Street (Based on borings on Pearl Street and Bradley Street (below the pavement cross section) sewer depth about 7 feet)

From 2 feet to 16+ feet; fine to coarse SAND, trace to little Silt and Gravel

Sachem Street (Whitney Avenue borings B-102-WA and B-103-WA) indicate conditions in the east 100 to 150 feet. Based on borings in Prospect Street, bedrock may be present within 6 feet of grade toward the west section of the sewer (maximum sewer depth = 8 feet, generally less than 6 feet)

4.0 General Recommendations regarding Sewer Excavation, Sewer Underlay and Backfill have been cited above. The **soil properties for design of shoring** are as follows:

Parameter	Value
Soil Weight (Backfill)	125 pcf
Passive Coefficient	3.53
Active Coefficient	0.28
Angle of Internal Friction (φ)	34°

5.0 Specific Recommendations are as follows:

5.1 At the deeper sewers at Whitney Avenue and Pearl Street: The depth of trenches in proximity to shallow gas and telephone lines will require special lateral trench protection. Normal trench boxes will not provide protection for adjacent utilities. The use of such protection as soldier pile/wood lagging systems or the patented systems with sliding plates supported on special slotted soldiers will be required for the trenches exceeding 6 feet in depth with existing utilities within 4 feet of trench sides. It is also recommended that the adjacent utilities be explored with local pits at 75 feet spacing to monitor impact from the shoring and excavation.

5.1.1 Shallow excavations (up to 6 feet) in which a trench can be excavated and kept open to slide a trench box relatively tight to the trench sides would be acceptable. The contractor will however remain responsible for any impact on adjacent utilities from lateral movement in excess of 1".

5.1.2 It would be possible to excavate and support adjacent utilities. This procedure would obviously impact traffic and would probably not be acceptable to the city.

6.0 This report has been prepared for specific application to the subject project in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. In the event that any changes in the nature, design and location of structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

The analyses and recommendations, submitted in this report, are based in part upon data obtained from the referenced explorations. The extent of variation between explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

Dr. Clarence Welti, P.E.; P.C. should perform a general review of the final design and specifications in order that geotechnical design recommendations may be properly interpreted and implemented, as they were intended.

Very truly yours,

Clarence Welti, Ph.D., P. E.
President, Dr. Clarence Welti, P. E.; P. C.

APPENDIX

Test Boring Logs

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-101WA**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/16/13
FINISH DATE 4/16/13

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
					CONCRETE 0.80	
	1	18-18-22-13	1.00'-3.00'		RED/BR. FINE-CRS. SAND, LITTLE GRAVEL, TRACE SILT	
					2.5	
	2	10-10-10-11	3.00'-5.00'		RED/BR. FINE-CRS. SAND, TRACE SILT & GRAVEL	
5	3	7-11-11-14	5.00'-7.00'			
10	4	9-11-14	10.00'-11.50'			
					13.0	
					RED/BR. FINE-MED. SAND, TRACE SILT	
15	5	11-15-23	15.00'-16.50'			
					16.5	
					BOTTOM OF BORING @ 16.5'	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-101WA**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-102WA**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/16/13
FINISH DATE 4/16/13

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-6-13-37	0.00'-2.00'		ASPHALT	
					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT — 0.75	
	2	28-22-22-28	2.00'-4.00'			
	3	22-35-50-48	4.00'-6.00'			
5						
10	4	auger sample	10.00'-10.00'			
					RED/BR. FINE-MED. SAND, LITTLE SILT — 11.0	
15	5	16-21-11	15.00'-16.50'			
					BOTTOM OF BORING @ 16.5' — 16.5	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-102WA**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
DTC

PROJECT NAME
TRUMBULL SEWER SEPARATION PHASE 2
LOCATION
WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-103WA**

GROUND WATER OBSERVATIONS
AT 12.5 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/16/13
FINISH DATE 4/16/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.40	
	1	40-35-45-40	1.00'-3.00'		BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT - FILL	
					3.0	
					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	
5	2	34-60	5.00'-6.00'			
					8.0	
					RED/BR. FINE-MED. SAND, LITTLE SILT	
10	3	10-11-13	10.00'-11.50'			
					12.5	
					RED/BR. FINE SAND, SOME SILT	
15	4	9-10-10	15.00'-16.50'			
					16.5	
					BOTTOM OF BORING @ 16.5'	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 HOLE NO. **B-103WA**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
DTC

PROJECT NAME
TRUMBULL SEWER SEPARATION PHASE 2
LOCATION
WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-104WA**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/16/13
FINISH DATE 4/16/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
					CONCRETE 0.80	
	1	32-60	1.00'-2.00'		BR. FINE-CRS. SAND, LITTLE GRAVEL, TRACE SILT - FILL 2.0	
					RED/BR. FINE-CRS. SAND AND GRAVEL, TRACE SILT	
5	2	35-60	5.00'-5.75'			
10	3	auger sample	10.00'-10.00'			
15	4	auger sample	15.00'-15.00'		BOTTOM OF BORING @ 15.0' 15.0	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 HOLE NO. **B-104WA**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-105WA**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/17/13
FINISH DATE 4/17/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-5-7-5	0.00'-2.00'		TOPSOIL 0.60 RED/BR. FINE-CRS. SAND, LITTLE GRAVEL, TRACE SILT	
	2	6-3-4-4	2.00'-4.00'			
5	3	4-4-5-6	4.00'-6.00'			
					AUGER REFUSAL @ 8.0' 8.0 NOTE: UNKNOWN OBSTRUCTION @ 8.0' TOO CLOSE TO UNDERGROUND ELECTRICAL LINES TO ATTEMPT TO BREAK THROUGH	
10						
15						
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-105WA**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-106WA**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/16/13
FINISH DATE 4/16/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	4-5-9-15	0.00'-2.00'		TOPSOIL, TRACE ASPHALT	
	1	32-60	1.00'-2.00'		BR. FINE-CRS. SAND, LITTLE SILT & GRAVEL - FILL	0.60
	2	20-5-4-4	2.00'-4.00'		BR. FINE-MED. SAND, LITTLE SILT	2.5
5	3	5-5-8-15	4.00'-6.00'		RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	6.5
10	4	25-29-29	10.00'-11.50'		RED/BR. FINE-CRS. SAND, TRACE SILT	9.0
15	5	8-10-13	15.00'-16.50'		BOTTOM OF BORING @ 16.5'	16.5
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-106WA**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-107WA**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/17/13
FINISH DATE 4/17/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	3-5-10-5	0.00'-2.00'		TOPSOIL	
					BR. FINE-MED. SAND, SOME SILT — 0.70	
	2	6-8-13-11	2.00'-4.00'			
					BR. FINE-MED. SAND, LITTLE SILT — 3.0	
	3	20-34-41-59	4.00'-6.00'			
5					WEATHERED SANDSTONE — 4.5	
					AUGER REFUSAL @ 6.0' — 6.0	
10						
15						
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **B-107WA**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-111BS**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/18/13
FINISH DATE 4/18/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
					CONCRETE 0.75	
	1	6-5-4-5	1.00'-3.00'		BR. FINE-MED. SAND, LITTLE SILT - FILL	
	2	2-7-17-20	3.00'-5.00'			
					RED/BR. FINE-CRS. SAND, TRACE SILT 4.0	
5						
10					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT 9.5	
	3	60	10.00'-10.42'			
15	4	auger sample				
20	5	auger sample			BOTTOM OF BORING @ 20.0' 20.0	
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-111BS**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
DTC

PROJECT NAME
TRUMBULL SEWER SEPARATION PHASE 2
LOCATION
WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-112BS**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/18/13
FINISH DATE 4/18/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.50	
	1	9-8-6-6	1.00'-3.00'		BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT - FILL 1.0	
					BR. FINE-MED. SAND, TRACE SILT	
	2	5-6-10-14	3.00'-5.00'			
					RED/BR. FINE-CRS. SAND, TRACE SILT 4.0	
5						
10						
	3	12-19-31	10.00'-11.50'		RED/BR. FINE SAND AND SILT 10.5	
					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT 12.0	
15						
	4	auger sample			BOTTOM OF BORING @ 15.0' 15.0	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-112BS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION BRADLEY ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-113BS**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/15/13
FINISH DATE 4/15/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
	1	60	1.00'-1.42'		BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT - FILL	
					2.5	
	2	30-60	3.00'-3.75'		RED/BR. FINE-CRS. SAND AND GRAVEL, TRACE SILT	
5	3	60	5.00'-5.42'			
10	4	auger sample	10.00'-10.00'			
					13.0	
					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	
15	5	auger sample	15.00'-15.00'		15.0	
					BOTTOM OF BORING @ 15.0'	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-113BS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION BRADLEY ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET | LINE & STA. | N. COORDINATE | E. COORDINATE

SURFACE ELEV. | HOLE NO. B-114BS

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/15/13
FINISH DATE 4/15/13

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.10	
	1	13-15-13-10	1.00'-3.00'		BR. FINE-CRS. SAND, SOME SILT, SOME GRAVEL - FILL 0.80	
					BR. FINE-MED. SAND, LITTLE SILT & GRAVEL - FILL	
	2	6-7-22-47	3.00'-5.00'			
					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT 4.0	
5	3	60	5.00'-5.42'			
10	4	auger sample	10.00'-10.00'			
					RED/BR. FINE-CRS. SAND, TRACE SILT 12.0	
15	5	14-25-21	15.00'-16.50'			
					BOTTOM OF BORING @ 16.5' 16.5	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. B-114BS

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
DTC

PROJECT NAME
TRUMBULL SEWER SEPARATION PHASE 2
LOCATION
BRADLEY ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-115BS**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/15/13
FINISH DATE 4/15/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.35	
	1	15-19-21-20	1.00'-3.00'		GREY FINE-CRS. SAND AND GRAVEL, TRACE SILT - FILL 0.70	
					BR. FINE-MED. SAND, SOME GRAVEL, LITTLE SILT, TRACE ASPHALT & BRICK - FILL	
	2	14-15-17-41	3.00'-5.00'		RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT 3.0	
5	3	16-60	5.00'-5.67'			
10	4	23-19-13	10.00'-11.50'		RED/BR. FINE-CRS. SAND, TRACE SILT 10.5	
15	5	13-14-20	15.00'-16.50'		BOTTOM OF BORING @ 16.5' 16.5	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-115BS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION LINCOLN ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-116LS**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/11/13
FINISH DATE 4/11/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.05	
					GREY FINE-CRS. GRAVEL AND FINE-CRS. SAND, TRACE SILT 0.75	
	1	7-10-11-17	1.00'-3.00'		BR. FINE-CRS. SAND, LITTLE SILT & GRAVEL - FILL	
	2	25-26-16-16	3.00'-5.00'		RED/BR. FINE-MED. SAND, TRACE SILT 3.0	
5						
	3	12-12-34-25	5.00'-7.00'		RED/BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT 6.0	
					RED/BR. FINE SAND, SOME SILT 9.0	
10	4	14-18-42	10.00'-11.50'			
					BOTTOM OF BORING @ 11.5' 11.5	
15						
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-116LS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION LINCOLN ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-117LS**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/11/13
FINISH DATE 4/11/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.10	
					GREY FINE-CRS. SAND AND GRAVEL, TRACE SILT 0.75	
	1	14-8-15-23	1.00'-3.00'		BR. FINE-CRS. SAND, LITTLE SILT, TRACE GRAVEL - FILL	
					RED/BR. FINE-CRS. SAND, LITTLE GRAVEL, TRACE SILT 2.0	
	2	50-34-36-60	3.00'-5.00'			
5	3	45-39-60	5.00'-7.00'			
					RED/BR. FINE SAND AND SILT 8.5	
10	4	9-8-8	10.00'-11.50'		BOTTOM OF BORING @ 11.5' 11.5	
15						
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-117LS**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
DTC

PROJECT NAME
TRUMBULL SEWER SEPARATION PHASE 2
LOCATION
LINCOLN ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-118LS**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/11/13
FINISH DATE 4/11/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.10	
					GREY FINE-CRS. GRAVEL AND FINE-CRS. SAND, TRACE SILT 0.50	
	1	6-3-4-6	1.00'-3.00'		BR. FINE-MED. SAND, SOME SILT, TRACE GRAVEL & BRICK - FILL	
					2.5	
	2	7-10-21-25	3.00'-5.00'		RED/BR. FINE-CRS. SAND, TRACE SILT	
5						
	3	24-27-27-30	5.00'-7.00'			
					9.0	
10					RED/BR. FINE-MED. SAND, TRACE SILT	
	4	19-24-25	10.00'-11.50'			
					11.5	
					BOTTOM OF BORING @ 11.5'	
15						
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1
HOLE NO. **B-118LS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B119WA**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/17/13
FINISH DATE 4/17/13

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
	1	17-12-15-14	1.00'-3.00'		CONCRETE 0.75 BR. FINE-CRS. SAND, LITTLE SILT & GRAVEL	
	2	13-20-35-60	3.00'-5.00'			
5					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT 4.0	
10	3	auger sample	10.00'-10.00'		RED/BR. FINE-MED. SAND, TRACE SILT 10.0	
15	4	12-19-22	15.00'-16.50'		BOTTOM OF BORING @ 16.5' 16.5	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B119WA**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-120WA**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/17/13
FINISH DATE 4/17/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
					CONCRETE 0.70	
	1	40-36-31-25	1.00'-3.00'		BR. FINE-CRS. SAND, LITTLE SILT & GRAVEL - FILL	
					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT 2.5	
	2	22-22-35-60	3.00'-4.75'			
5						
10	3	auger sample	10.00'-10.00'			
					RED/BR. FINE TO FINE-CRS. SAND, TRACE SILT 12.5	
15	4	10-12-19	15.00'-16.50'			
					BOTTOM OF BORING @ 16.5' 16.5	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-120WA**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION WHITNEY AVE., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-121WA**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/17/13
FINISH DATE 4/17/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
					CONCRETE 0.70	
	1	9-7-8-8	1.00'-3.00'		BR. FINE-CRS. SAND, SOME SILT, LITTLE GRAVEL - FILL	
	2	4-60	3.00'-3.75'			
					4.0	
5	3	60	5.00'-5.42'		RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	
10	4	auger sample	10.00'-10.00'			
					11.5	
					RED/BR. FINE SAND, LITTLE SILT	
15	5	24-24-26	15.00'-16.50'			
					16.5	
					BOTTOM OF BORING @ 16.5'	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1

HOLE NO. **B-121WA**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION LINCOLN ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-122LS

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/15/13
FINISH DATE 4/15/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.35	
	1	5-4-4-5	1.00'-3.00'		RED/BR. FINE-CRS. SAND, LITTLE GRAVEL, TRACE SILT, TRACE WOOD - FILL	
	2	3-4-3-4	3.00'-5.00'			
5						
	3	7-6-13-25	5.00'-7.00'			
					6.5	
					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	
10						
	4	60	10.00'-10.42'		10.5	
					BOTTOM OF BORING @ 10.5'	
15						
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-122LS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION LINCOLN ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET

LINE & STA.

N. COORDINATE

E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-123LS**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/15/13

FINISH DATE 4/15/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.05	
	1	6-5-4-4	1.00'-3.00'		BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT 0.75	
					DARK BR. FINE-MED. SAND, SOME SILT - FILL	
					RED/BR. FINE-CRS. SAND, LITTLE FINE GRAVEL, TRACE SILT 2.0	
	2	11-9-6-8	3.00'-5.00'		RED/BR. FINE-CRS. SAND, TRACE SILT 3.5	
5						
	3	8-10-12-15	5.00'-7.00'			
					RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT 8.0	
10	4	24-40-57	10.00'-11.50'			
					BOTTOM OF BORING @ 11.5' 11.5	
15						
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-123LS**

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN 06033

CLIENT
DTC

PROJECT NAME
TRUMBULL SEWER SEPARATION PHASE 2
LOCATION
LINCOLN ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-124LS**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/11/13
FINISH DATE 4/11/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.05	
					GREY FINE-CRS. GRAVEL AND FINE-CRS. SAND, TRACE SILT 0.75	
	1	10-12-13-10	1.00'-3.00'		BR. FINE-MED. SAND, SOME SILT, LITTLE FINE GRAVEL - FILL	
					RED/BR. FINE-MED. SAND, TRACE SILT 2.5	
	2	9-8-11-14	3.00'-5.00'		RED/BR. FINE-CRS. SAND, TRACE SILT 4.0	
5	3	9-13-17-20	5.00'-7.00'			
					RED/BR. FINE-CRS. SAND, SOME GRAVEL, LITTLE SILT 9.0	
10	4	60	10.00'-10.92'		BOTTOM OF BORING @ 10.1' 10.1	
15						
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1
HOLE NO. **B-124LS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWER SEPARATION PHASE 2 LOCATION PEARL ST., NEW HAVEN, CT.

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140 lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-128PS

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/11/13
FINISH DATE 4/11/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT	0.20
					GREY FINE-CRS. GRAVEL AND FINE-CRS. SAND, TRACE SILT	0.80
	1	6-5-9-27	1.00'-3.00'		BR. FINE-MED. SAND, SOME GRAVEL, LITTLE SILT - FILL	2.0
					BR. FINE SAND, SOME SILT	3.0
	2	20-37-27-15	3.00'-5.00'		RED/BR. FINE-CRS. SAND, SOME GRAVEL, TRACE SILT	
5	3	24-31-60	5.00'-6.50'			
						8.5
					RED/BR. FINE-CRS. SAND, LITTLE GRAVEL, TRACE SILT	
10	4	12-14-20	10.00'-11.50'			
						13.0
					RED/BR. FINE-MED. SAND, TRACE SILT	
15	5	14-14-19	15.00'-16.50'			
						16.5
					BOTTOM OF BORING @ 16.5'	
20						
25						
30						
35						

LEGEND: COL. A:RECOVERY "

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-128PS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWERS SEPARTION PHASE 2 LOCATION PEARL STREET, NEW HAVEN, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375	
HAMMER WT.			140lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-129PS

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/10/13
FINISH DATE 4/10/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
	1	13-10-7-7	1.00'-3.00'		GREY/BR. FINE-CRS.GRAVEL AND SAND, TRACE GRAVEL 0.8	
					BR.FINE-CRS.SAND, LITTLE SILT, TRACE GRAVEL	
	2	8-10-12-45	3.00'-5.00'		BR.FINE-CRS.SAND, SOME GRAVEL, TRACE SILT 3.5	
5	3	40-60	5.00'-5.92'			
10	4	44-35-30	10.00'-11.50'		RED/BR.FINE-MED.SAND, TRACE SILT 12.0	
15	5	6-11-10	15.00'-16.50'		BOTTOM OF BORING @ 16.5' 16.5	
20						
25						
30						
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J.BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. B-129PS

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWERS SEPARTION PHASE 2 LOCATION PEARL STREET, NEW HAVEN, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375	
HAMMER WT.			140lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-130PS

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/10/13
FINISH DATE 4/10/13

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.20	
	1	23-23-24-30	1.00'-3.00'		BR. FINE-CRS.SAND, SOME GRAVEL, TRACE SILT 1.0	
					RED/BR.FINE-CRS.SAND AND GRAVEL, TRACE SILT	
	2	34-60	3.00'-4.00'			
5	3	50-60	5.00'-6.00'			
10	4	18-25-28	10.00'-11.50'			
15	5	11-11-9	15.00'-16.50'		RED/BR.FINE-CRS.SAND, TRACE SILT & GRAVEL 12.5	
20					BOTTOM OF BORING @ 16.5' 16.5	
25						
30						
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J.BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-130PS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWERS SEPARTION PHASE 2 LOCATION PEARL STREET, NEW HAVEN, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375	
HAMMER WT.			140lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-131PS

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/10/13
FINISH DATE 4/10/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.35	
	1	14-9-8-6	1.00'-3.00'		GREY/BR. FINE-CRS.GRAVEL AND SAND, TRACE SILT 1.0	
					RED/BR.FINE-CRS.SAND, LITTLE SILT & GRAVEL- FILL	
	2	6-6-6-5	3.00'-5.00'			
5	3	6-10-25-27	5.00'-7.00'			
					RED/BR.FINE-CRS.SAND, SOME GRAVEL, TRACE SILT 6.0	
					RED/BR.FINE-CRS.SAND, TRACE SILT & GRAVEL 9.0	
10	4	8-9-12	10.00'-11.50'			
					RED/BR.FINE-CRS.SAND AND GRAVEL, TRACE SILT 13.0	
15	5	AUGER SAMPLE	15.00'-15.00'		BOTTOM OF BORING @ 15.0' 15.0	
20						
25						
30						
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J.BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. B-131PS

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWERS SEPARTION PHASE 2 LOCATION PEARL STREET, NEW HAVEN, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375	
HAMMER WT.			140lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-132PS

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/10/13
FINISH DATE 4/10/13

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
	1	22-31-21-16	1.00'-3.00'		GREY/BR. FINE-CRS.GRAVEL AND SAND, TRACE SILT 0.70	
					RED/BR.FINE-CRS.SAND, SOME GRAVEL, TRACE SILT	
	2	12-15-22-22	3.00'-5.00'			
5	3	16-17-20-25	5.00'-7.00'			
10	4	13-19-24	10.00'-11.50'			
					RED/BR.FINE-MED.SAND, TRACE SILT 12.0	
15	5	8-8-9	15.00'-16.50'			
					BOTTOM OF BORING @ 16.5' 16.5	
20						
25						
30						
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J.BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-132PS**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME TRUMBULL SEWERS SEPARTION PHASE 2 LOCATION PEARL STREET, NEW HAVEN, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375	
HAMMER WT.			140lbs	
HAMMER FALL			16"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. B-133PS

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 4/10/13
FINISH DATE 4/10/13

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0					ASPHALT 0.30	
	1	13-10-8-5	1.00'-3.00'		GREY/BR. FINE-CRS.GRAVEL AND SAND, TRACE SILT 0.80	
					RED/BR.FINE-MED.SAND, TRACE SILT	
	2	4-8-40-60	3.00'-5.00'			
5	3	38-60	5.00'-5.83'		RED/BR.FINE-CRS.SAND AND GRAVEL,TRACE SILT 5.0	
10	4	AUGER SAMPLE	10.00'-10.00'			
15	5	AUGER SAMPLE	15.00'-15.00'		BOTTOM OF BORING @ 15.0' 15.0	
20						
25						
30						
35						

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J.BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. B-133PS

APPENDIX B

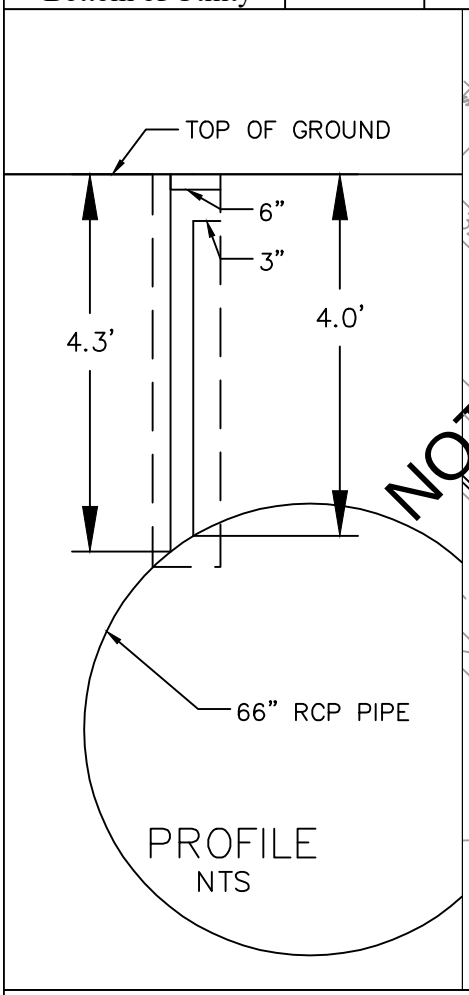
Test Pit Logs

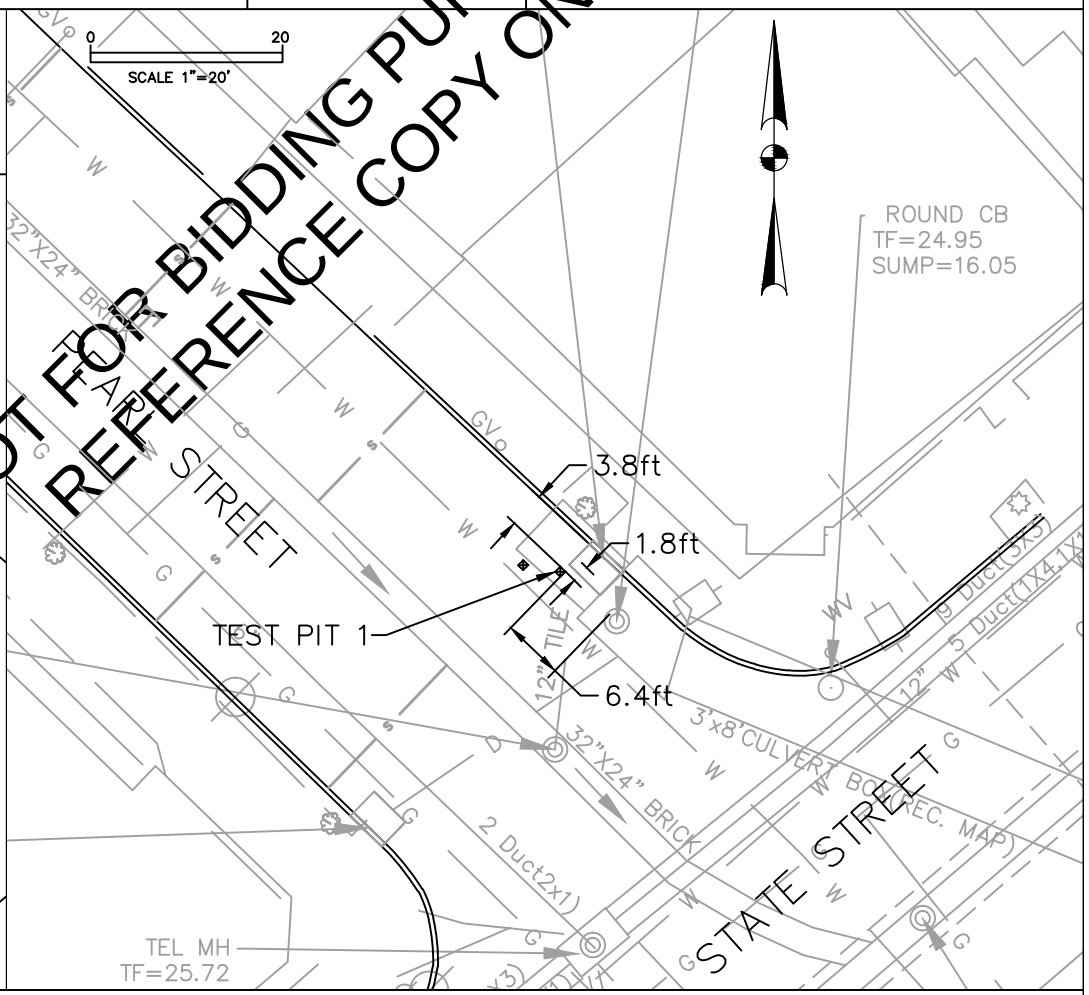
Test Pit
No: 1

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.01A				Station: 100+04.62	
Purpose: Locate Drain Pipe (60" RCP Stub)				Location: State and Pearl Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		25.28'	NA	
Bottom of Pit		20.98'	4.3'	
Top of Utility		21.28'	4.0'	The depth to the side (not top) of the pipe was measured.
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				





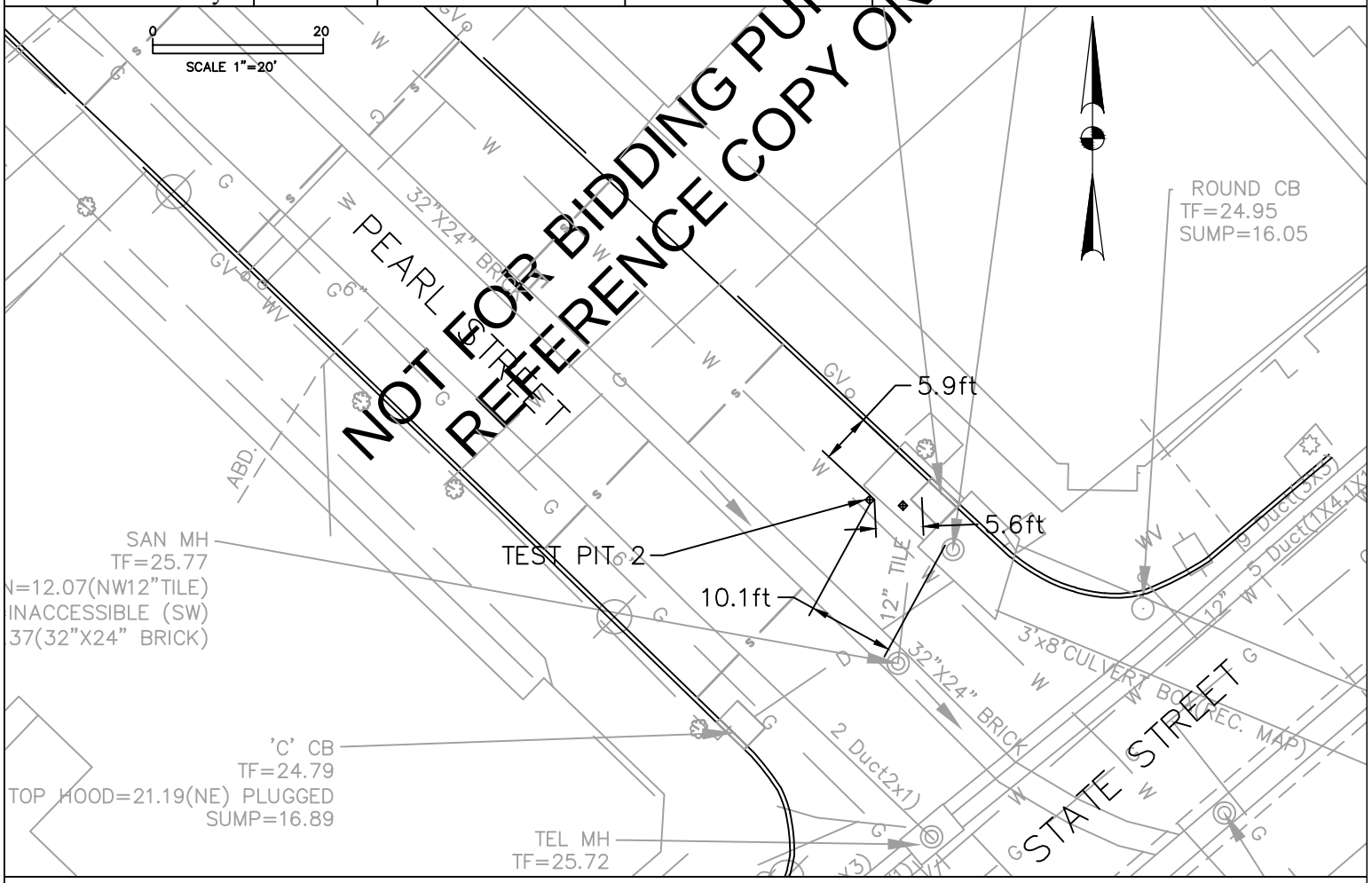
Comments:
Bituminous Concrete Depth = 0.7'

Test Pit
No: 2

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.01A				Station: 100+09.91	
Purpose: Locate 6" Water				Location: State and Pearl Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		25.40'	NA	
Bottom of Pit		20.40'	5.0'	
Top of Utility		20.40'	5.0'	
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



Comments:
Bituminous Concrete Depth = 0.3' and Subbase Depth= 0.9'
Water pipe is 1' southwest of the test pit boundaries (further from the closest curb).

Test Pit
No: 4

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.01A				Station: 103+33.18	
Purpose: Locate Sanitary Sewer				Location: 33 Pearl Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		27.32'	NA	
Bottom of Pit		20.22'	7.1'	
Top of Utility		NA	NA	
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				

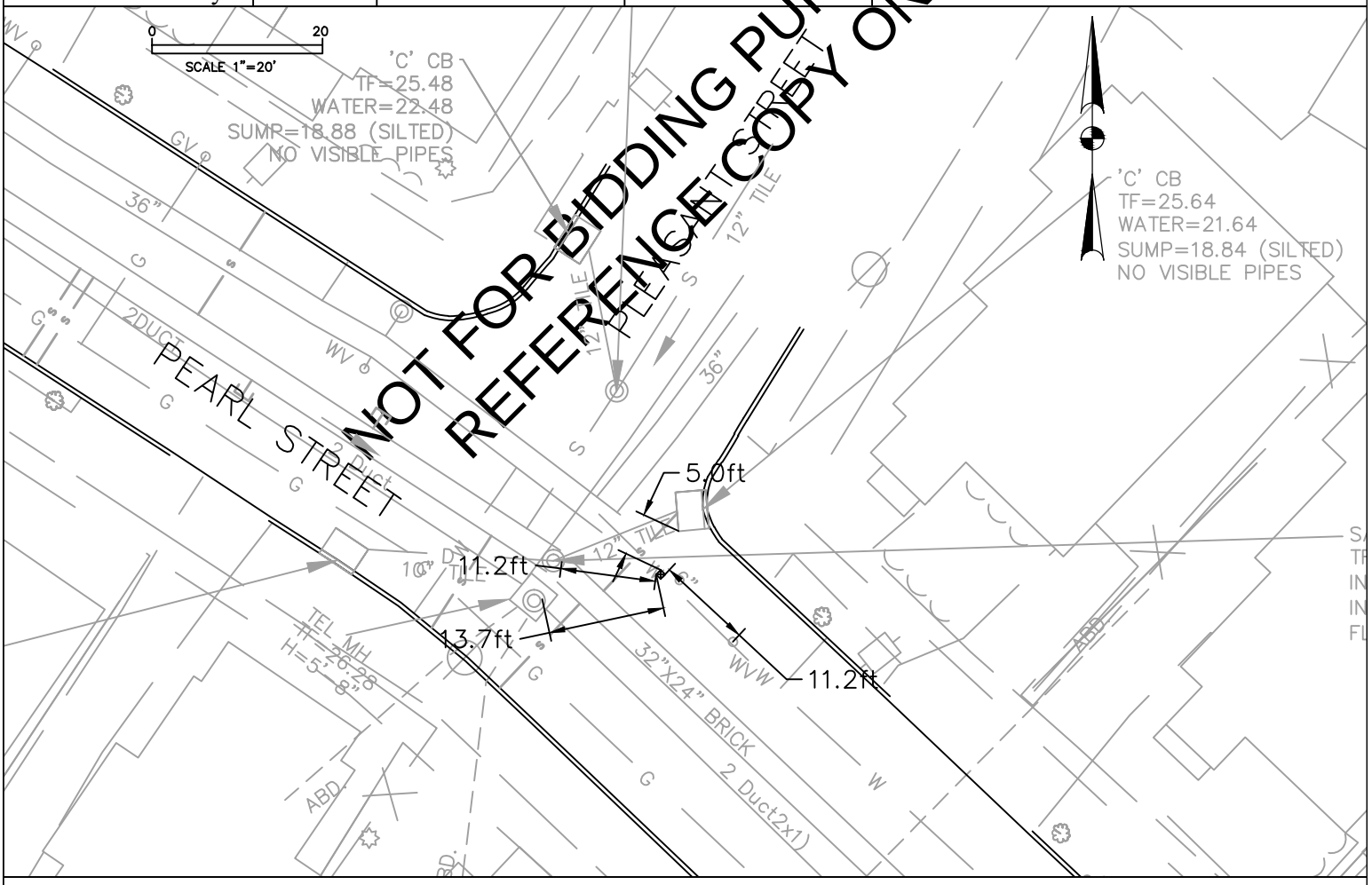
Comments:
Bituminous Concrete Depth = 0.3' and Subbase Depth= 0.6'
Did not locate sanitary sewer. Opened Sewer Manhole in front of 41 Pearl Street. Depth from surface to water was 15'.

Test Pit
No: 5

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.02A				Station: 106+14.46	
Purpose: Locate 36" Water and Thrust Block				Location: Pearl and Pleasant Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		26.00'	NA	
Bottom of Pit		20.70'	5.3'	
Top of Utility		20.70'	5.3'	6" Water pipe
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



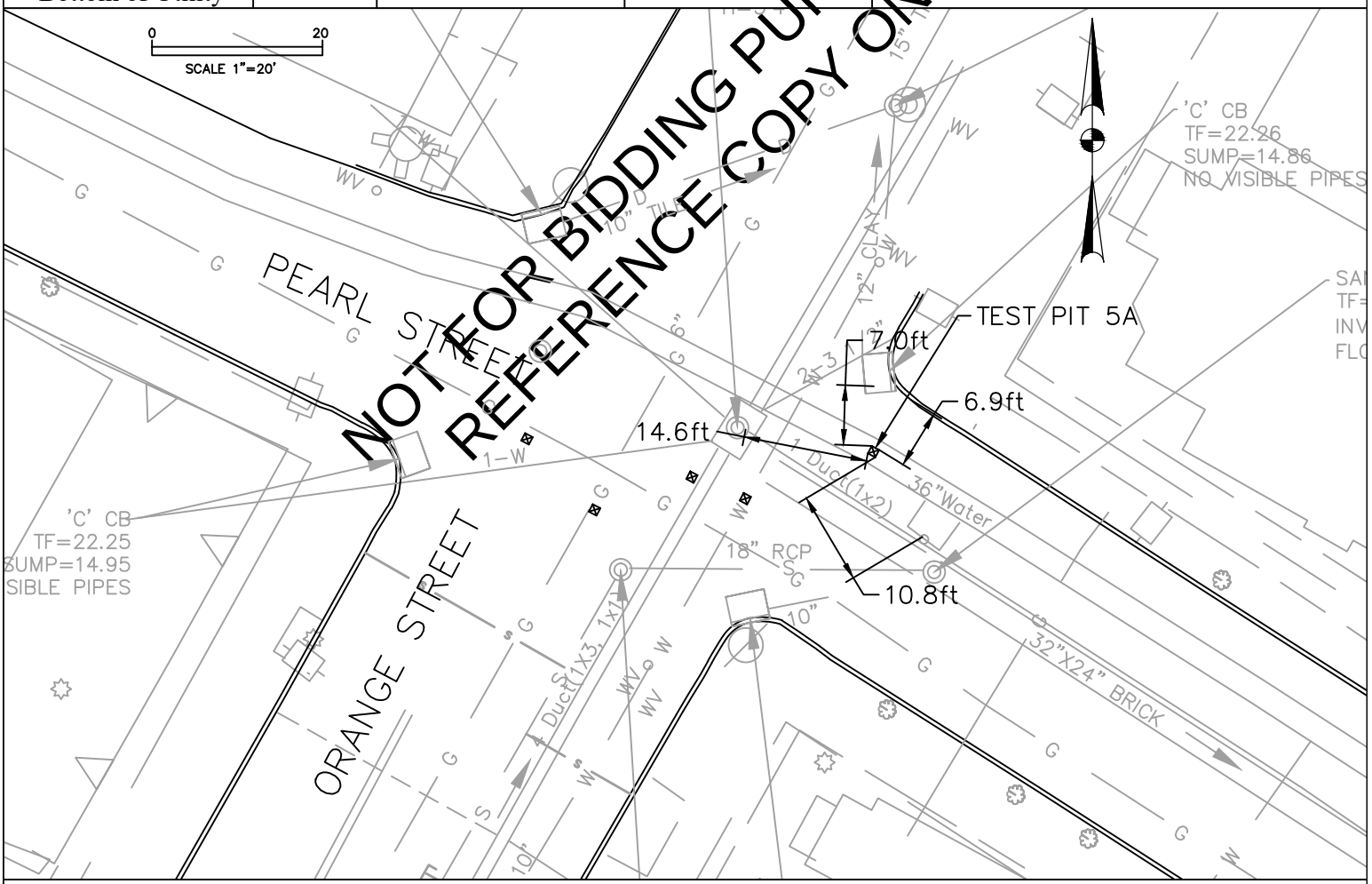
Comments:
Bituminous Concrete Depth = 0.7'
Did not see thrust block.

Test Pit
No: 5A

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.02A				Station: 110+49.43	
Purpose: Locate 36" Water				Location: Pearl and Orange Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		22.99'	NA	
Bottom of Pit		17.69'	5.3'	
Top of Utility		17.69'	5.3'	36" Water pipe
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



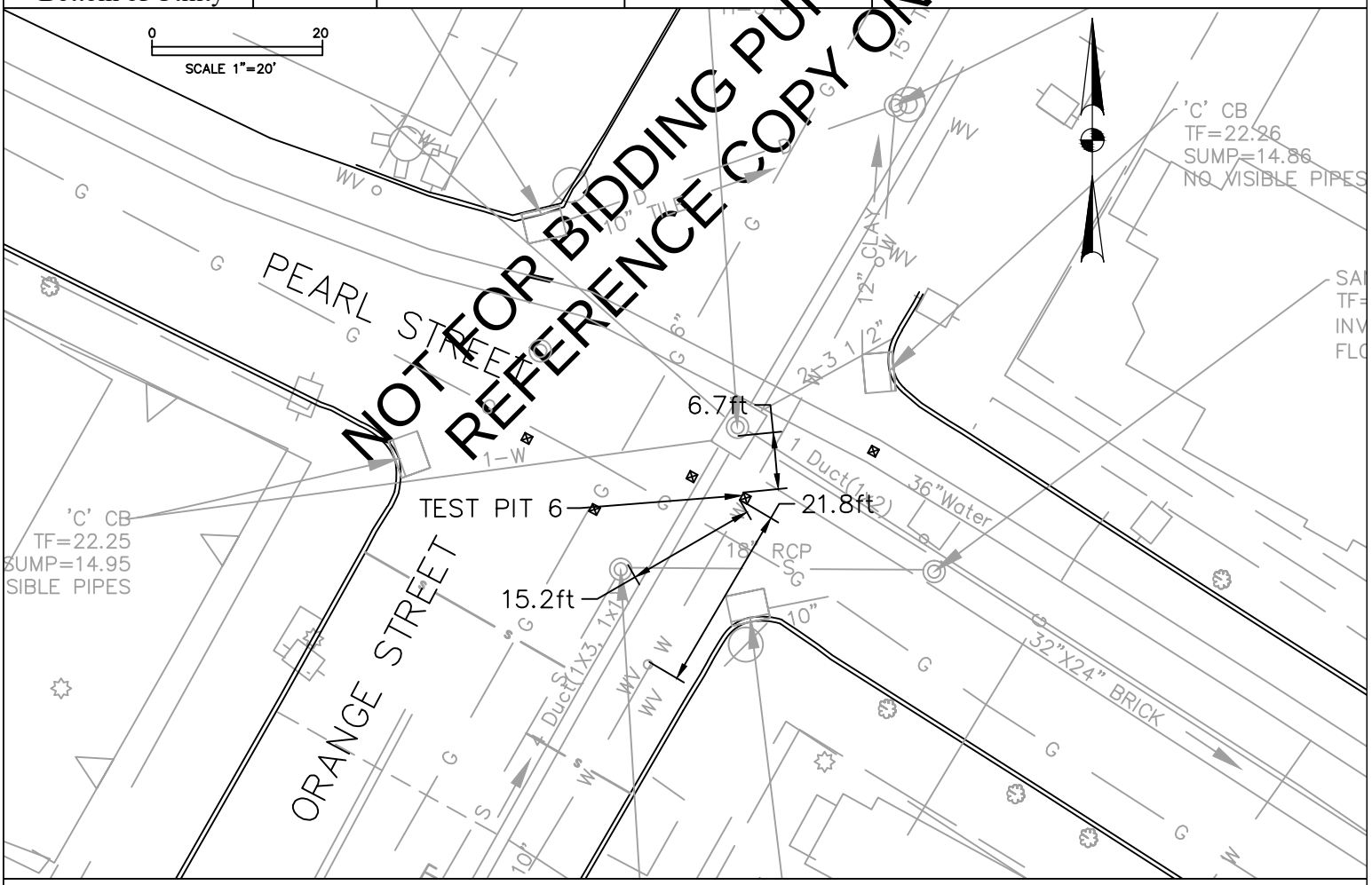
Comments:
Bituminous Concrete Depth = 0.6'

Test Pit
No: 6

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.02A				Station: 110+60.20	
Purpose: Locate Water				Location: Pearl and Orange Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		23.25'	NA	
Bottom of Pit		17.75'	5.5'	
Top of Utility		18.05'	5.2'	Water pipe
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



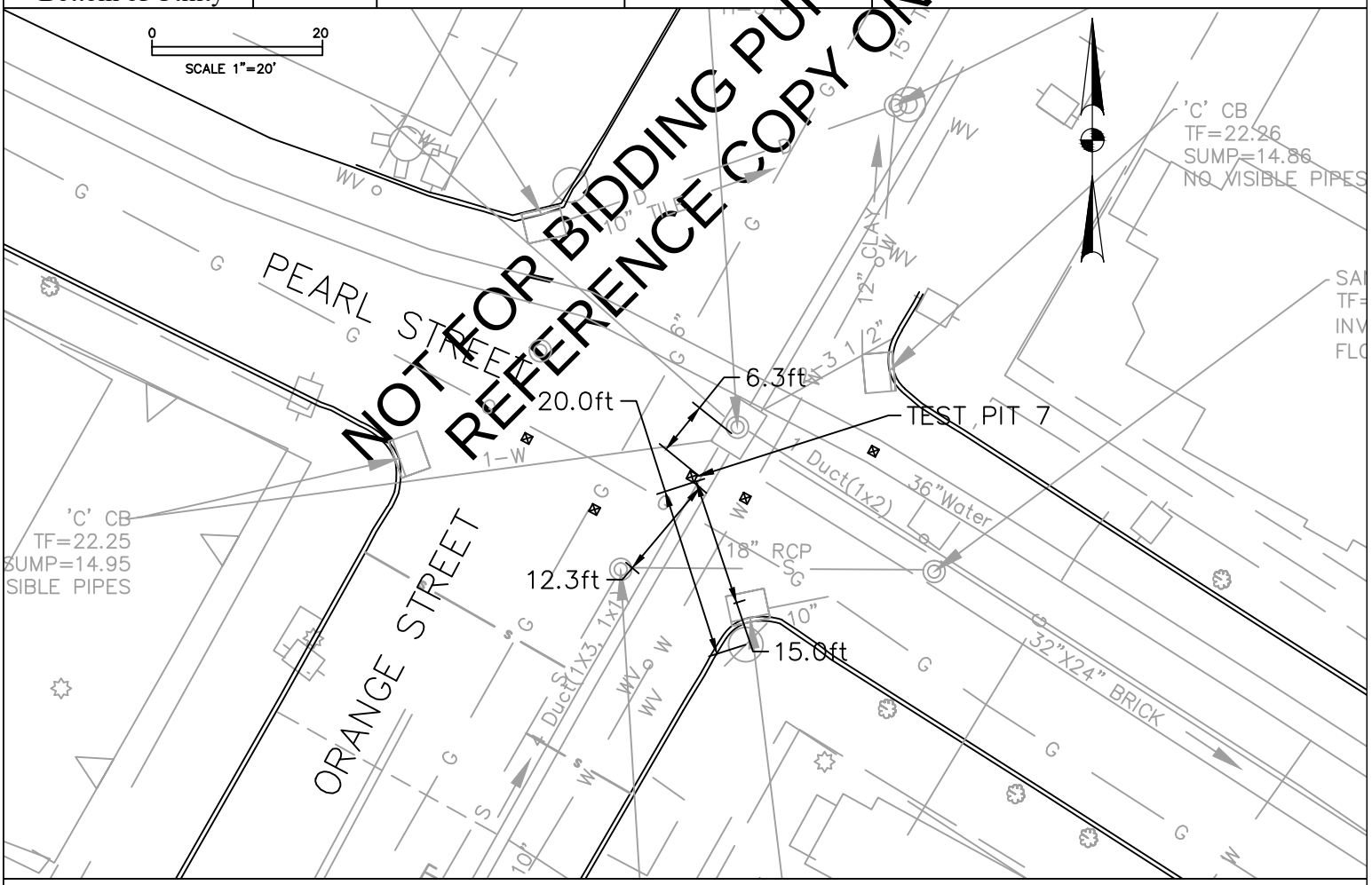
Comments:
Bituminous Concrete Depth = 0.75'

Test Pit
No: 7

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.02A				Station: 110+66.93	
Purpose: Locate AT&T				Location: Pearl and Orange Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		23.29'	NA	
Bottom of Pit		19.19'	4.1'	
Top of Utility		19.69'	3.6'	Black Pipe
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



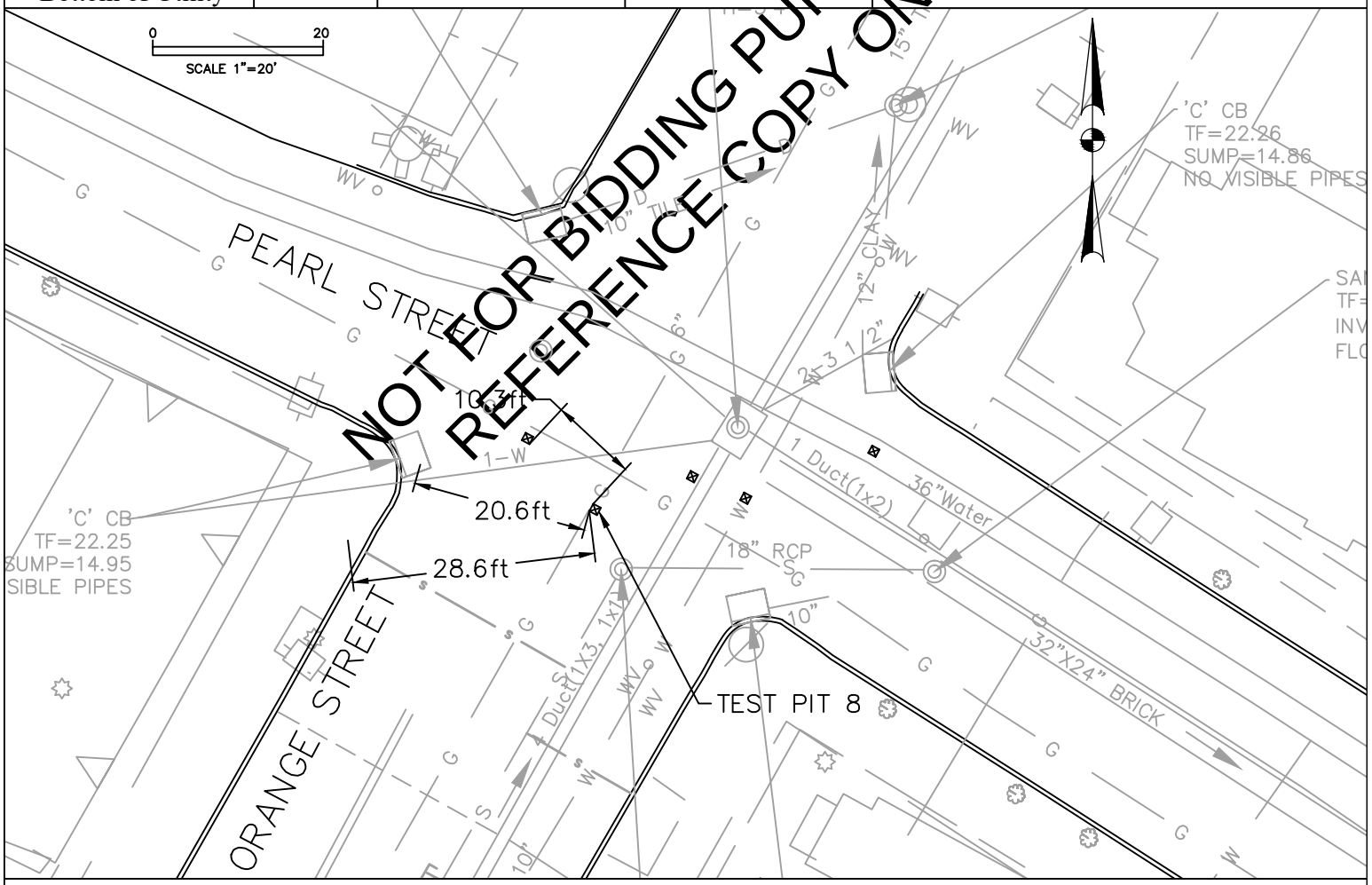
Comments:
Bituminous Concrete Depth = 0.8'

Test Pit
No: 8

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.02A				Station: 110+75.25	
Purpose: Locate Gas				Location: Pearl and Orange Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		23.35'	NA	
Bottom of Pit		18.15'	5.2'	
Top of Utility		18.85'	4.5'	White 6" Gas Pipe
Bottom of Utility		18.15'	around 5.2'	
Top of Utility				
Bottom of Utility				



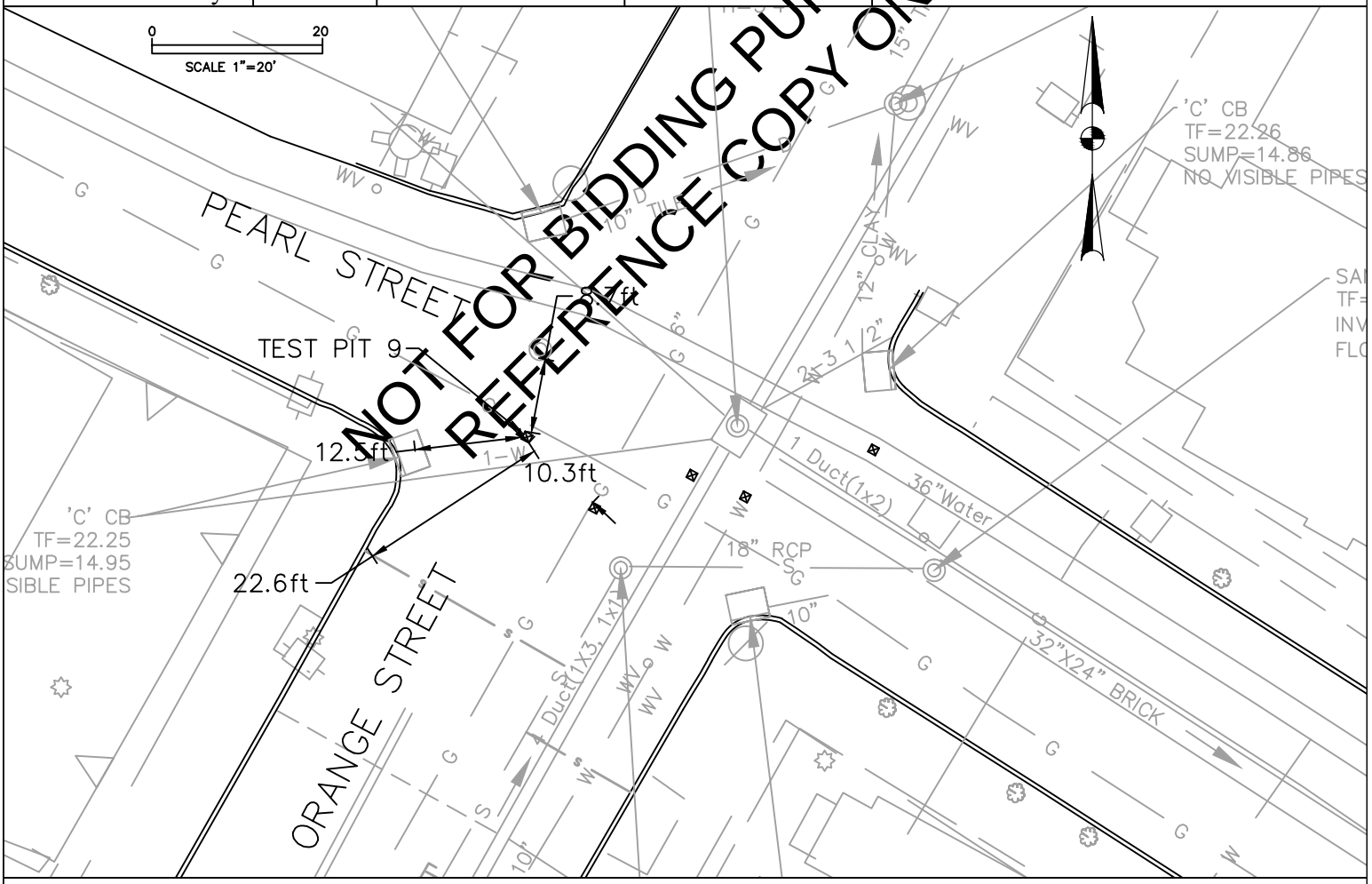
Comments:
Bituminous Concrete Depth = 0.6'
Subbase= 1.6'

Test Pit
No: 9

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.02A				Station: 110+86.15	
Purpose: Locate Electric				Location: Pearl and Orange Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		23.06'	NA	
Bottom of Pit		17.76'	5.3'	
Top of Utility		17.86'	5.2'	White Duct, box shaped
Bottom of Utility			Unknown	
Top of Utility				
Bottom of Utility				



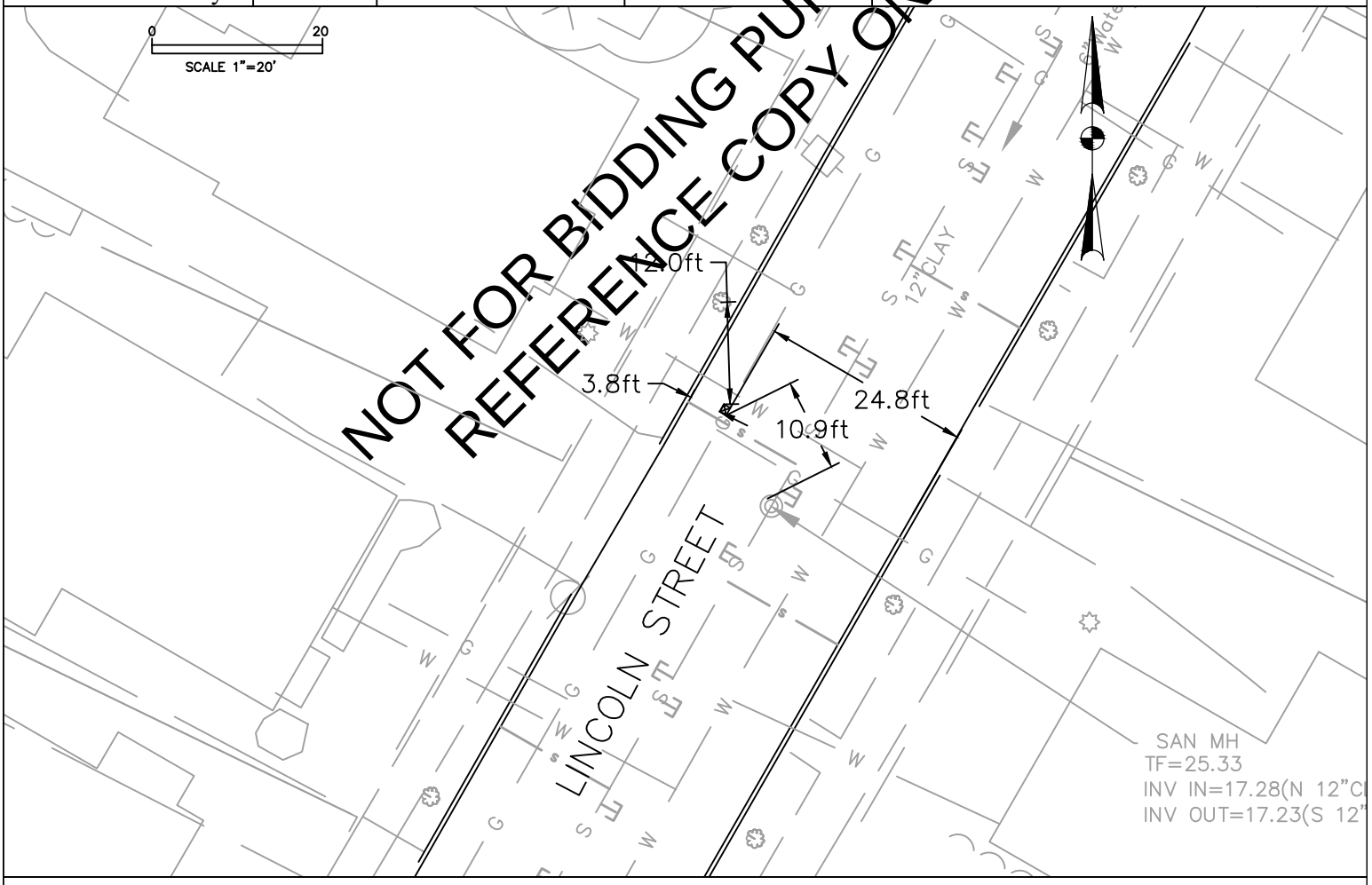
Comments:
Bituminous Concrete Depth = 0.6'
Aggregate Depth= 0.9' to 1.0'

Test Pit
No: 10

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.02A				Station: 114+95.29	
Purpose: Locate 4" Gas				Location: 54 Lincoln Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		24.88'	NA	
Bottom of Pit		21.58'	3.3'	
Top of Utility		21.98'	2.9'	4" Gas Pipe
Bottom of Utility			Unknown	
Top of Utility				
Bottom of Utility				



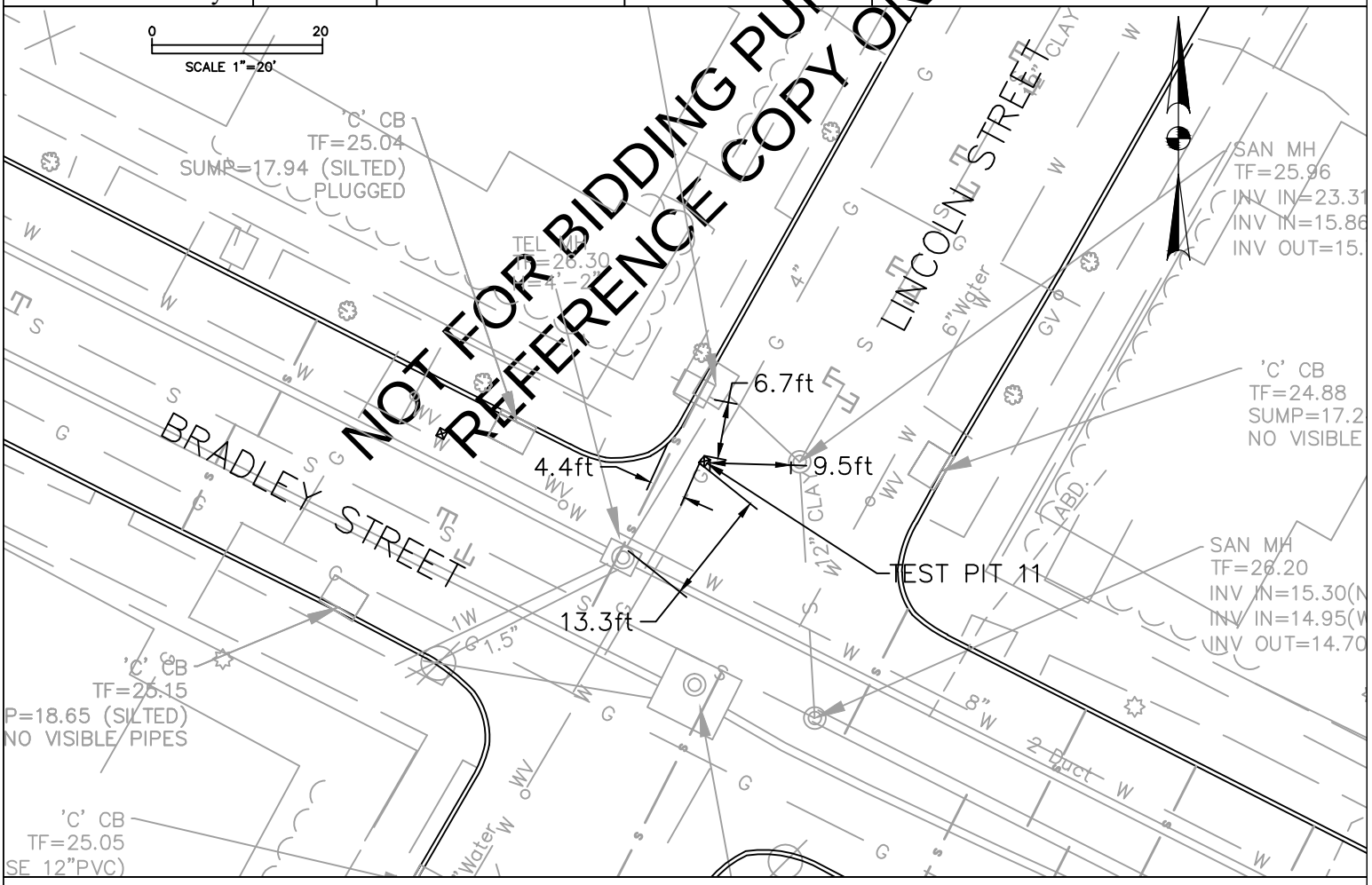
Comments:
Bituminous Concrete Depth = 0.3'
Aggregate Depth= 1.0'

Test Pit
No: 11

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.02A				Station: 119+40.62	
Purpose: Locate 4" Gas				Location: 22 Lincoln Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		25.72'	NA	
Bottom of Pit		22.02'	3.7'	
Top of Utility		22.32'	3.4'	4" Gas Pipe
Bottom of Utility			Unknown	
Top of Utility				
Bottom of Utility				



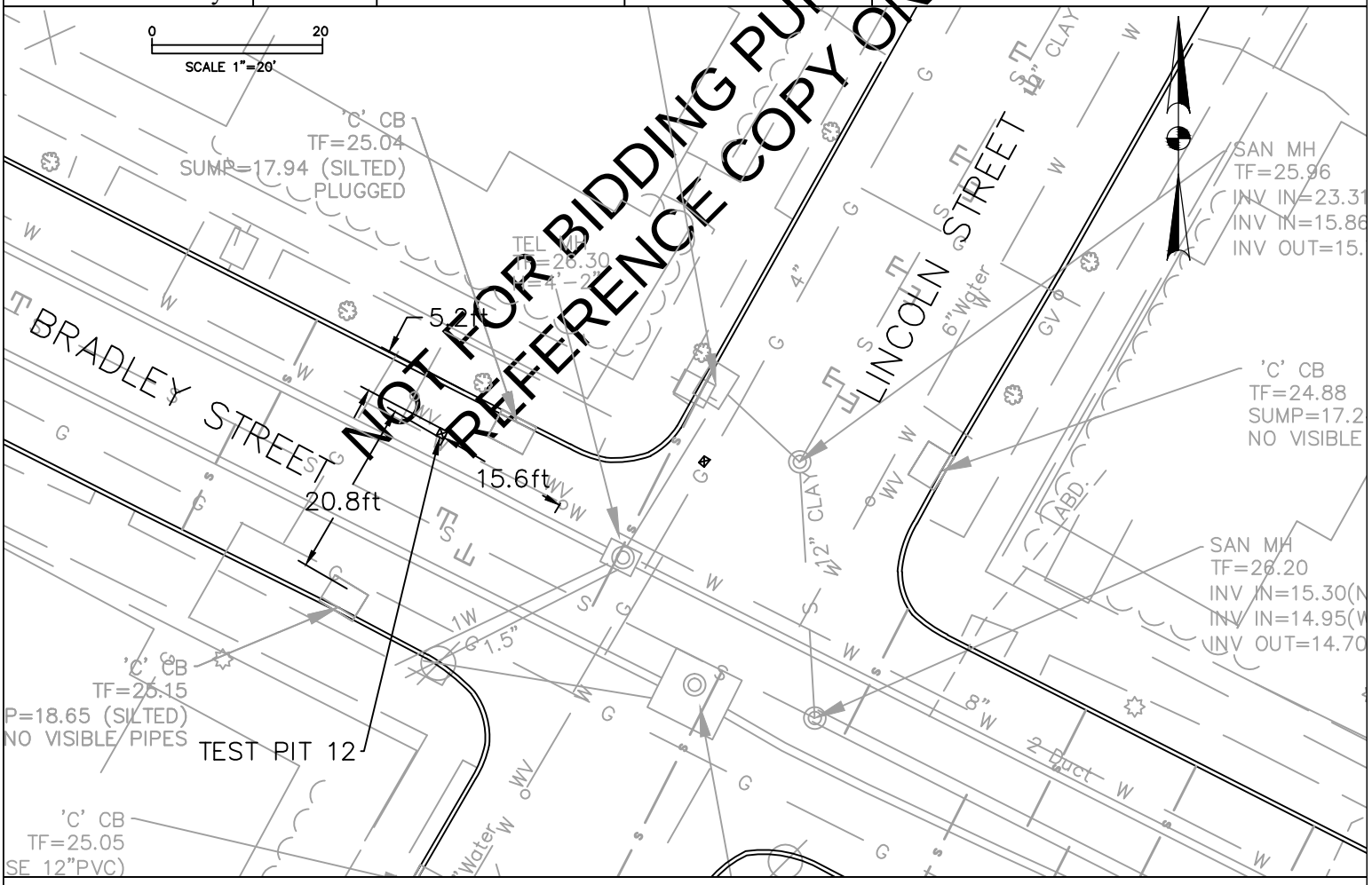
Comments:
Gas Pipe was closer to the southwest side of Lincoln than the "Call Before You Dig" mark.

Test Pit
No: 12

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.02A				Station: 119+74.68	
Purpose: Locate AT&T				Location: 22 Lincoln Street/ Bradley Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		25.92'	NA	
Bottom of Pit		18.02'	7.9'	
Top of Utility		23.72'	2.2'	AT&T Duct
Bottom of Utility		NA	Unknown	
Top of Utility		18.02'	7.9'	Water Pipe
Bottom of Utility		NA	Unknown	



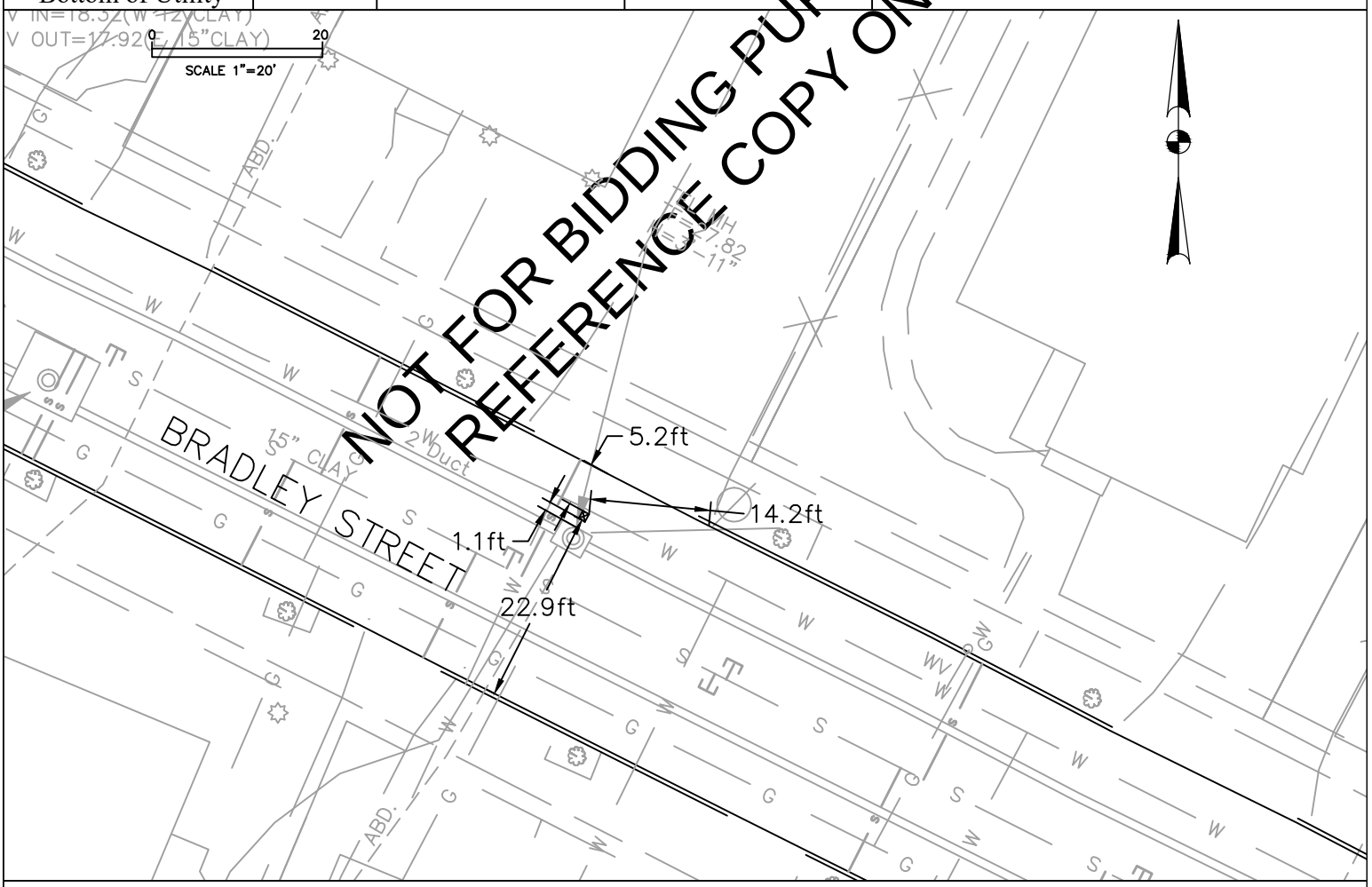
Comments:
AT&T Duct was 1-2 feet outside test pit to the south (away from the closest curb).
Bituminous Concrete= 0.4'
Aggregate=0.6'

Test Pit
No: 13

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A			Contract Number: CWF 2012-04	
Plan Number: TP.03A			Station: 122+56.27	
Purpose: Locate AT&T Vault Edge			Location: 255 and 261 Bradley Street	
BM:	Elevation:		Pay Item No.:	Quantity:
√:	Elevation:			
	BS:			

	FS:	Elevation	Depth	Description
Top of Ground		27.65'	NA	
Bottom of Pit		22.15'	5.5'	
Top of Utility		27.05'	0.6'	Brick Manhole/Conduct
Bottom of Utility		22.65'	5.0'	
Top of Utility				
Bottom of Utility				



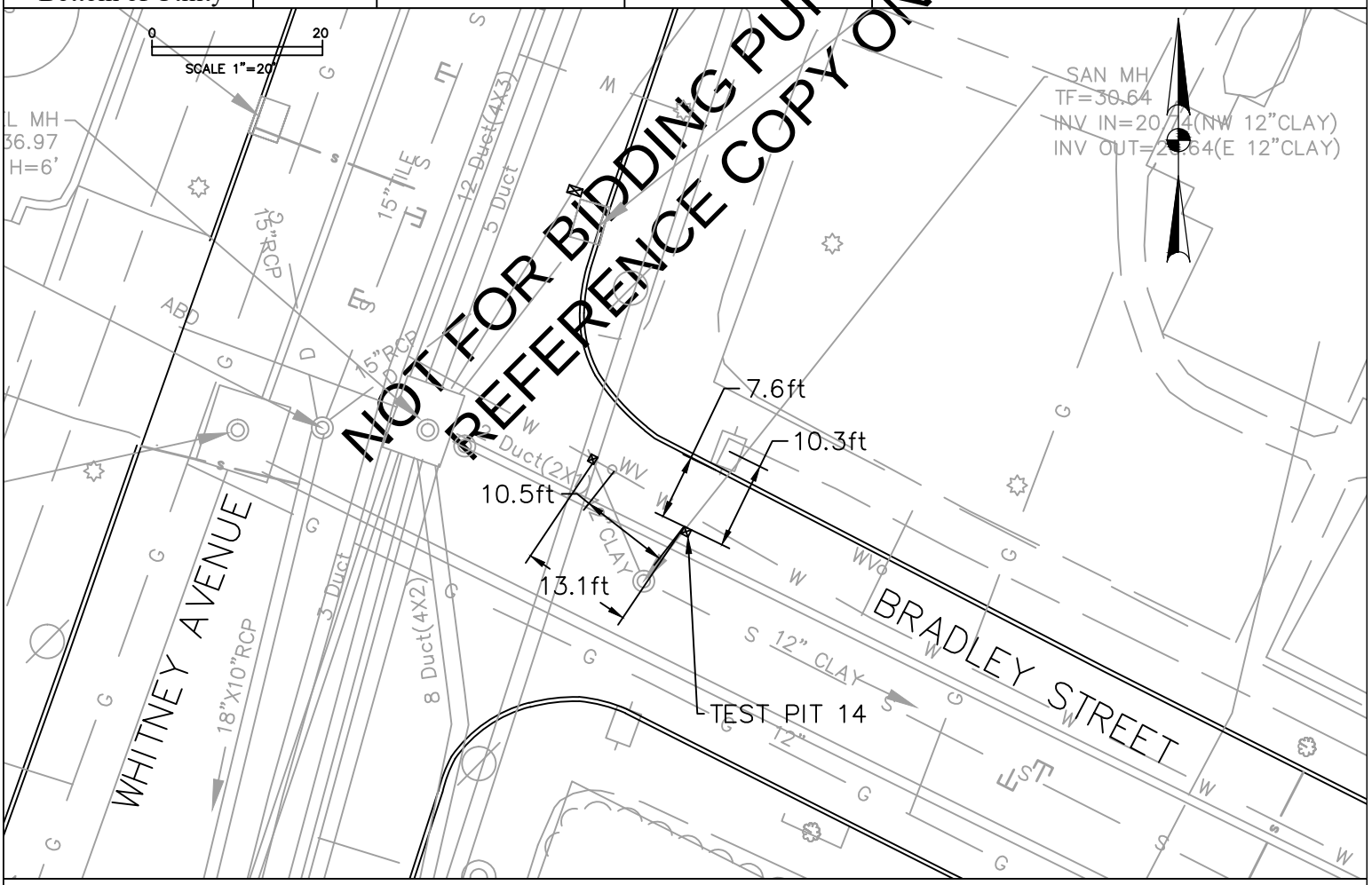
Comments:
Bituminous Concrete= 0.3'
Aggregate=0.6'

Test Pit
No: 14

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 125+26.51	
Purpose: Locate AT&T				Location: Bradley Street/ Whitney Avenue	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		30.62'	NA	
Bottom of Pit		27.12'	3.5'	
Top of Utility		28.62'	1.8'	AT&T Duct
Bottom of Utility		28.12'	2.5'	
Top of Utility				
Bottom of Utility				



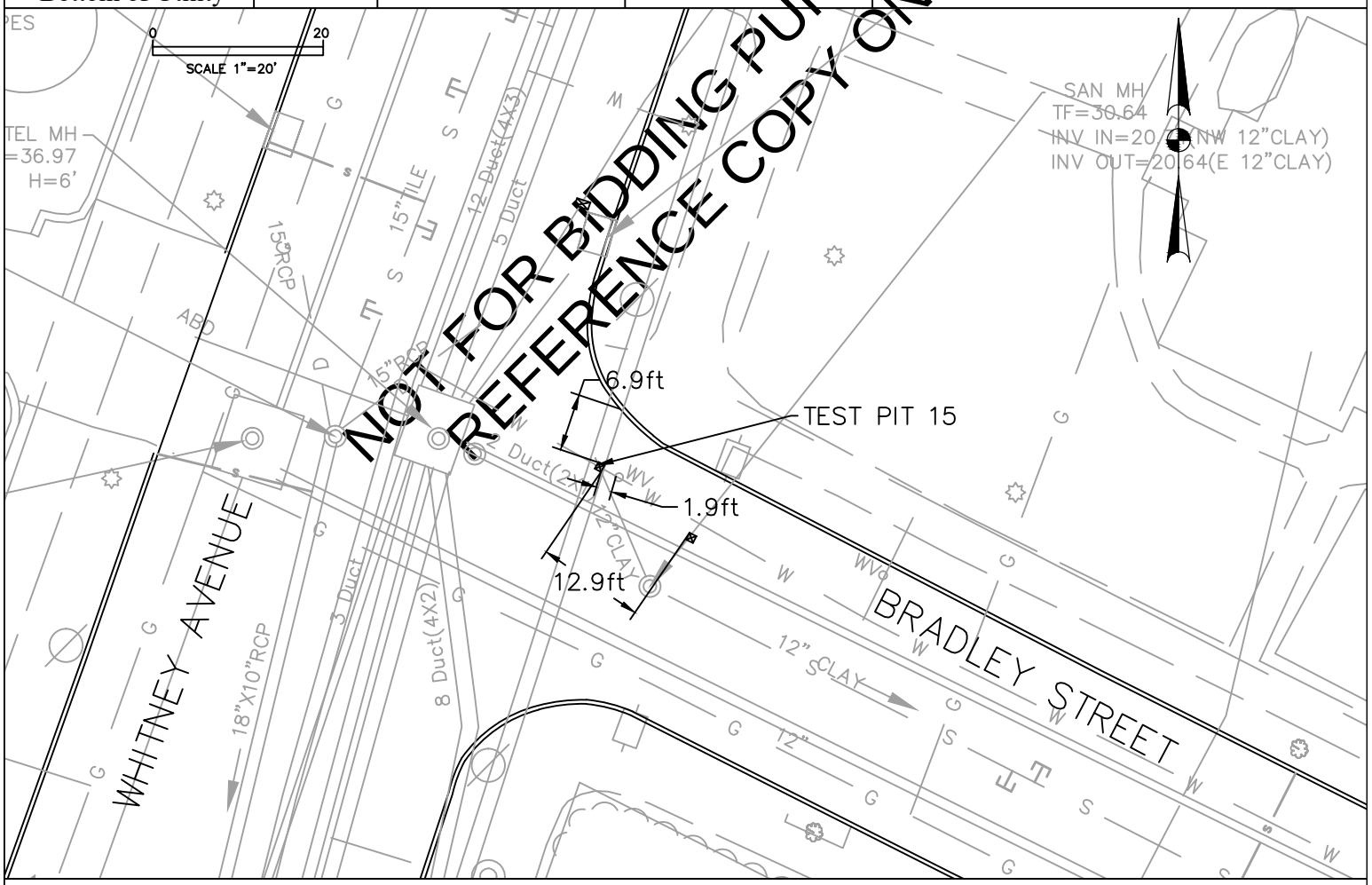
Comments:
Bituminous Concrete= 0.6'
Concrete= 1.0'

Test Pit
No: 15

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A / TP.05A				Station: 125+40.04	
Purpose: Locate AT&T				Location: Whitney Avenue near Bradley Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		30.91'	NA	
Bottom of Pit		27.71'	3.2'	
Top of Utility		28.41'	2.5'	AT&T Duct
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



Comments:
Depth to Bituminous Concrete= 0.5'.
Depth to Concrete = 1.2'.

Test Pit
No: 16

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A / TP.05A				Station: 125+66.38	
Purpose: Locate AT&T				Location: Whitney Avenue near Bradley Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		31.55'	NA	
Bottom of Pit		29.75'	1.8'	
Top of Utility		30.05'	1.5'	AT&T Duct
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				

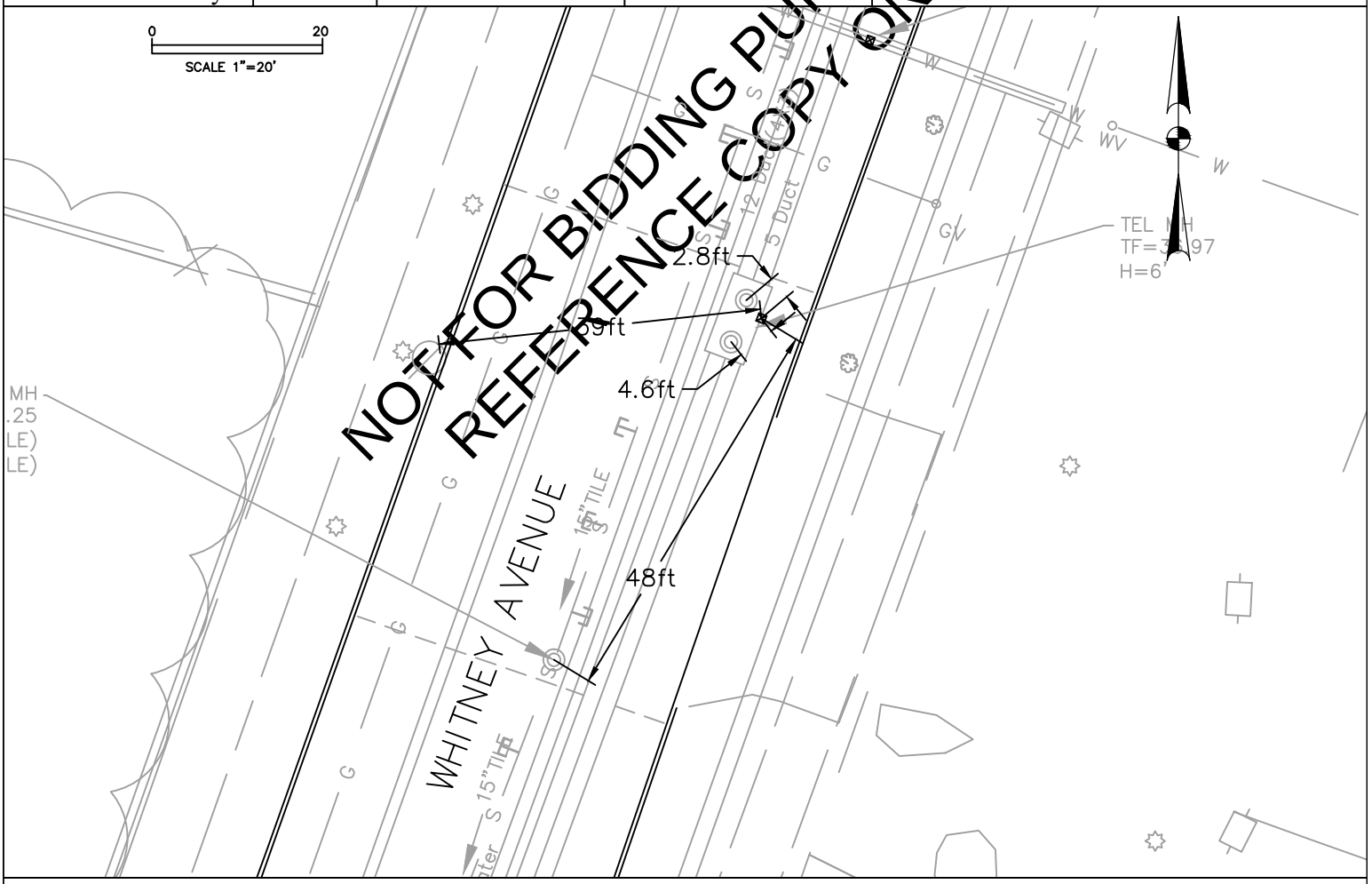
Comments:
Test Pit was directly above AT&T Duct, so it was not possible to see the bottom of the AT&T Duct.
Depth to Bituminous Concrete= 0.8'.
Concrete was not present.

Test Pit
No: 17

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 128+01.14	
Purpose: Locate AT&T Vault				Location: Whitney Avenue	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		36.99'	NA	
Bottom of Pit		31.99'	5.0'	
Top of Utility		34.99'	2.0'	Brick AT&T Vault
Bottom of Utility		31.99'	5.0'	Bottom not visible. Estimated by feel of soil.
Top of Utility				
Bottom of Utility				



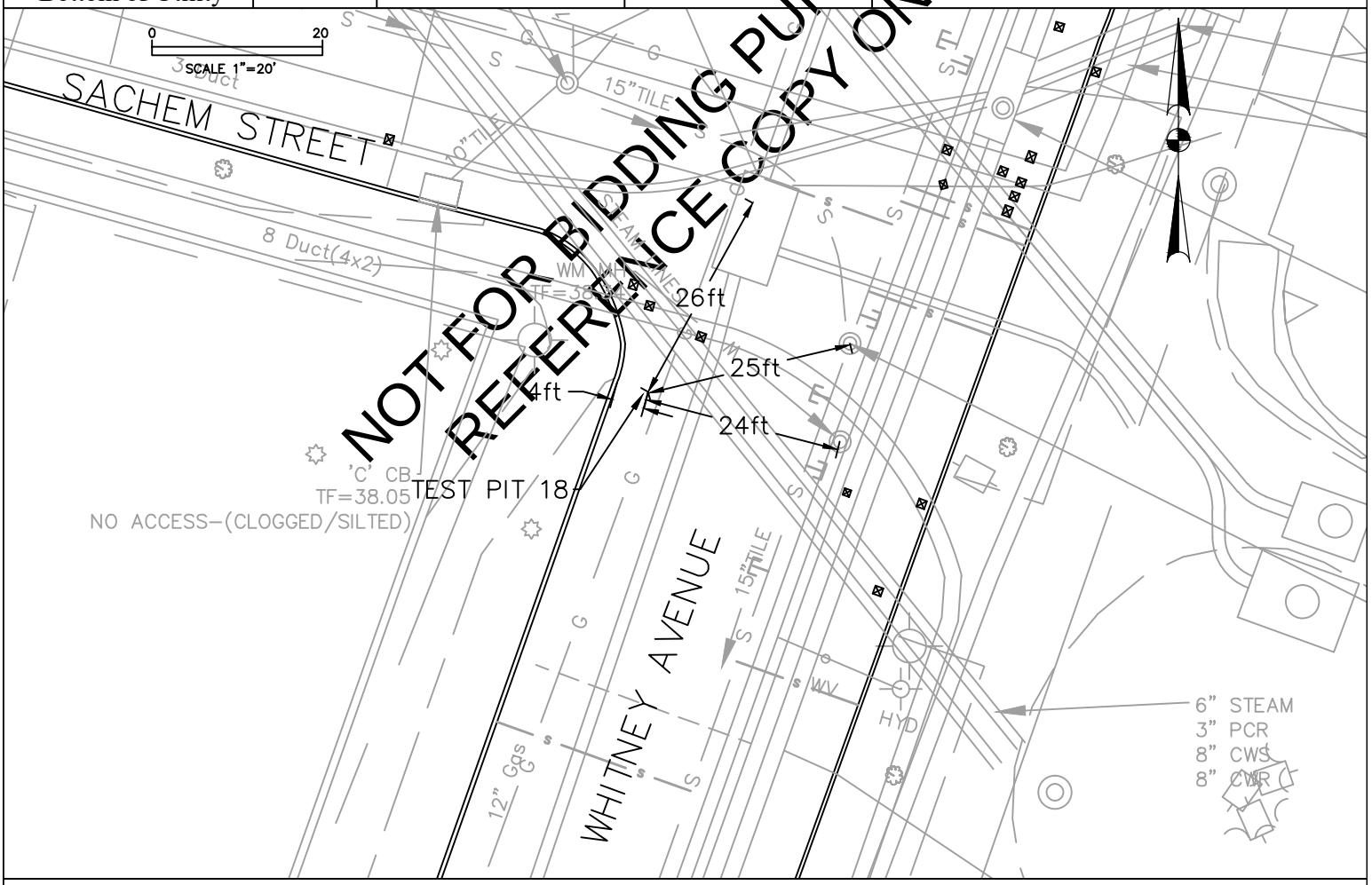
Comments:
Bituminous Concrete= 5" (0.42').
Concrete= 10" (0.83')
Measured the tie offs from eastern side.

Test Pit
No: 18

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 129+44.58	
Purpose: Locate 12" Gas				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.01'	NA	
Bottom of Pit		?'	?'	
Top of Utility		34.01'	4.0'	12" Gas Pipe
Bottom of Utility		32.61'	5.4'	
Top of Utility				
Bottom of Utility				



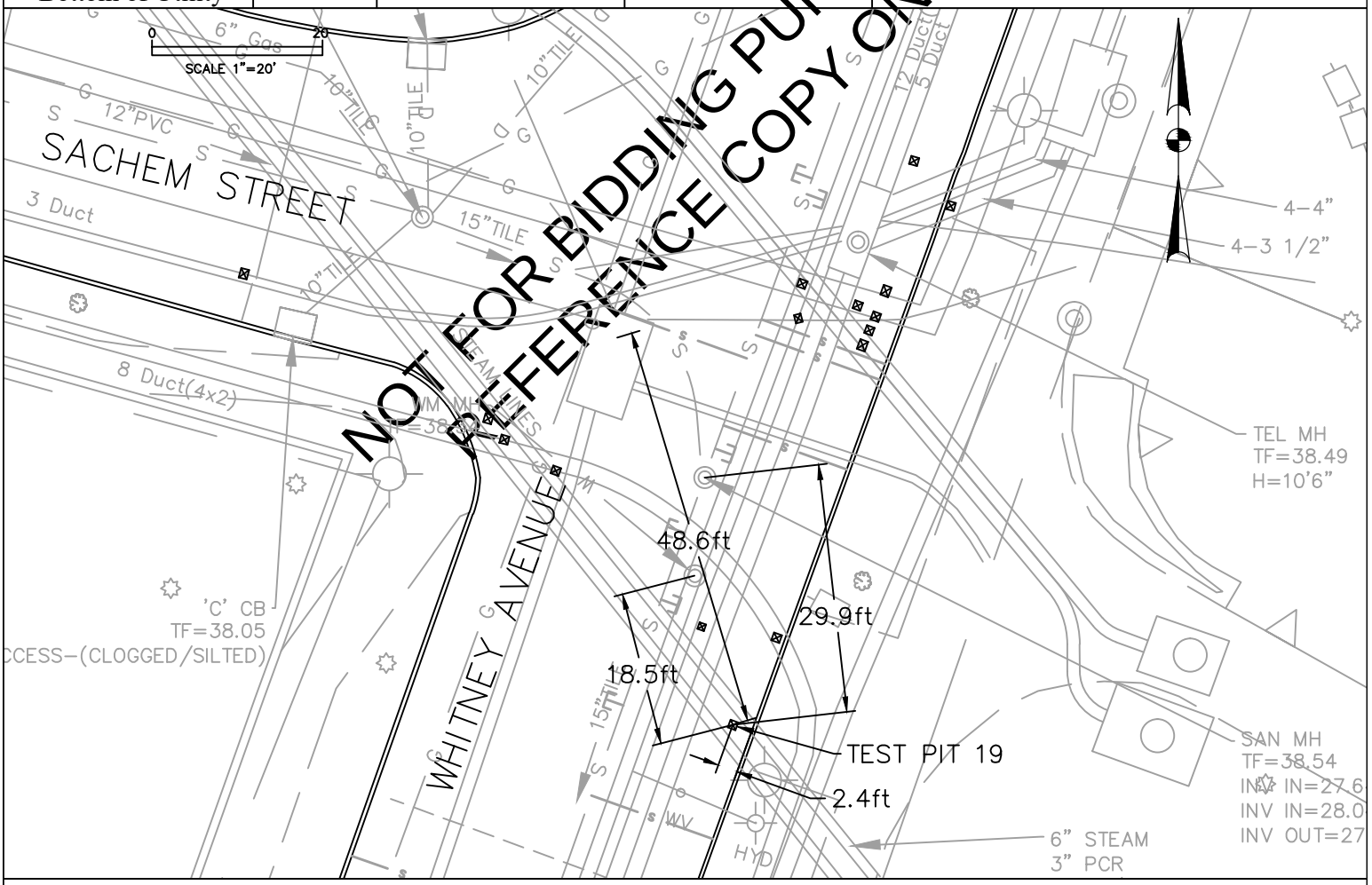
Comments:
Bituminous Concrete= 4" (0.33').
Concrete= 1.0'

Test Pit
No: 19

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 129+31.85	
Purpose: Locate Steam Tunnel				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.12'	NA	
Bottom of Pit		28.12'	10'	
Top of Utility		28.12'	10'	Steam Tunnel
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



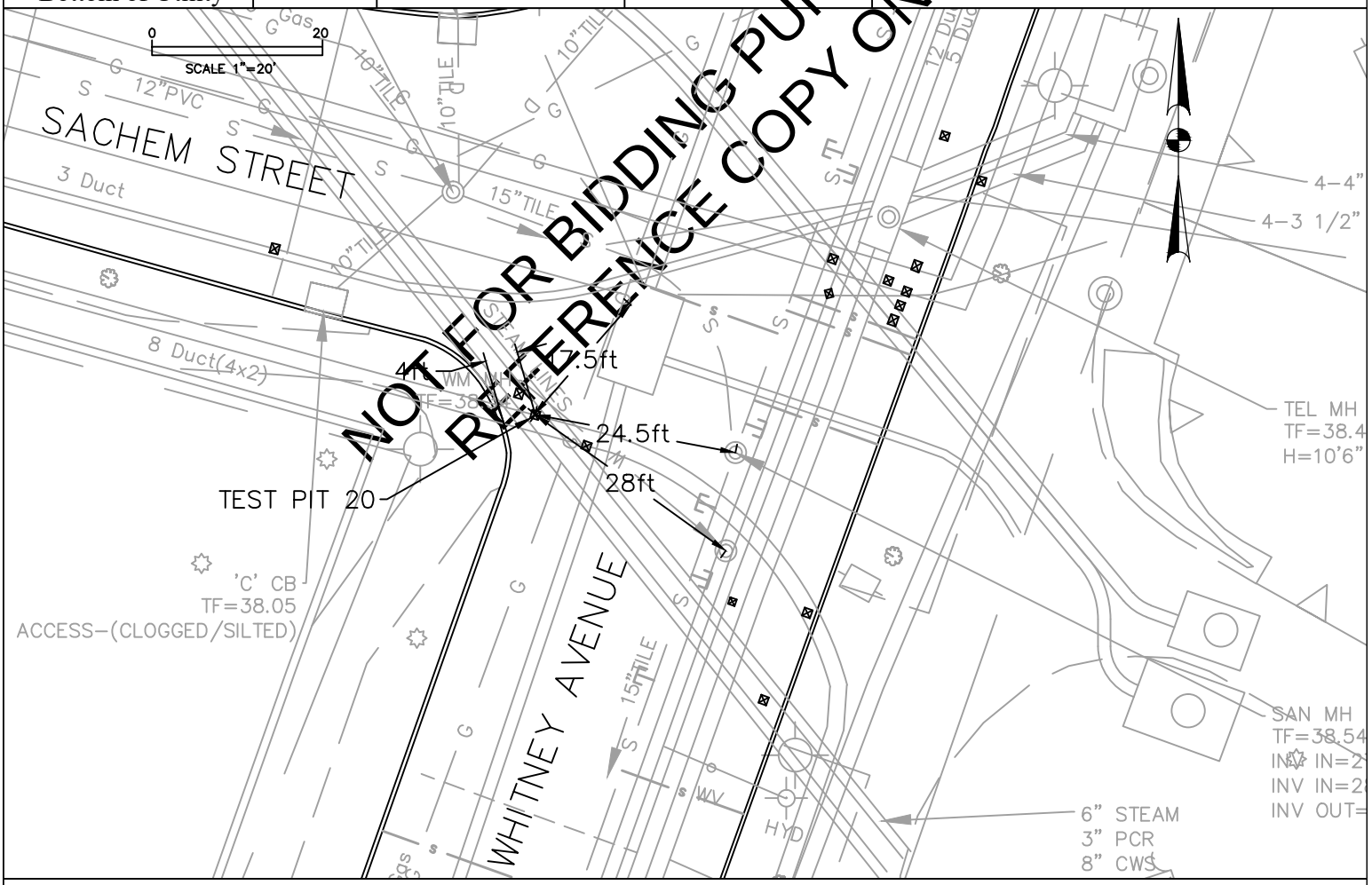
Comments:
Bituminous Concrete= 7" (0.58').
Concrete= 9" (0.75')
Could not see tunnel, but NPL could feel the tunnel with lance.

Test Pit
No: 20

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 129+54.25	
Purpose: Locate Steam Tunnel and AT&T				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.21'	NA	
Bottom of Pit		27.21'	11'	
Top of Utility		NA	4.83'	Concrete encased AT&T conduit
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



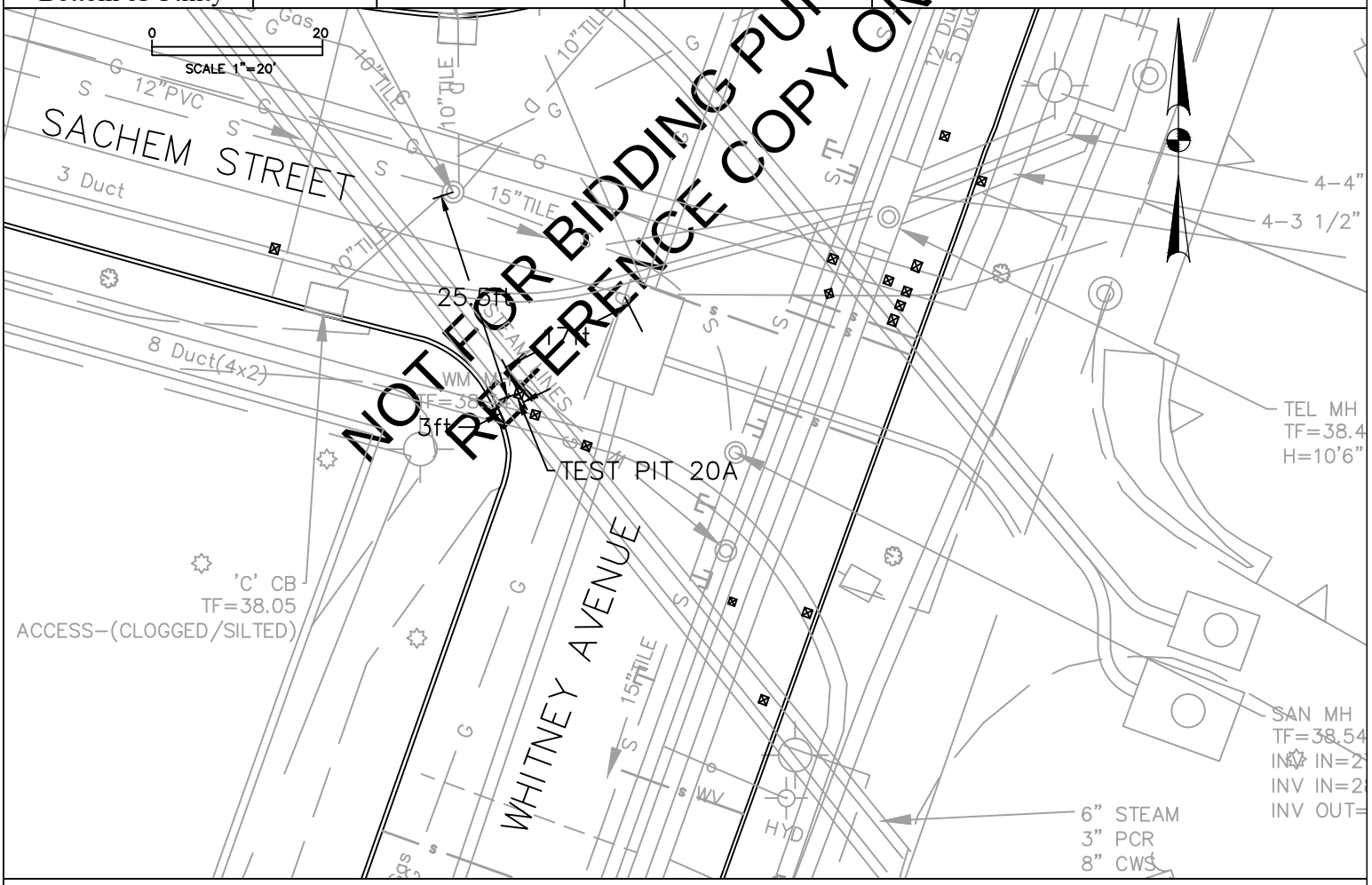
Comments:
Bituminous Concrete= 6" (0.5').
Concrete= 7" (0.6')
Steam was not found approximately 11' deep, cannot verify with tape. Hole was caving in.

Test Pit
No: 20A

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 129+56.06	
Purpose: Locate Steam Tunnel				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.22'	NA	
Bottom of Pit		28.22'	11'	
Top of Utility		NA	NA	
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



Comments:
Bituminous Concrete= 6" (0.5').
Concrete= 10" (0.83')
Steam was not found approximately 11' deep, cannot verify with tape. Hole was caving in.

Test Pit
No: 21

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 129+44.26	
Purpose: Locate AT&T				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.22'	NA	
Bottom of Pit		33.72'	4.5'	
Top of Utility		33.72'	4.5'	Concrete encased AT&T conduit
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				

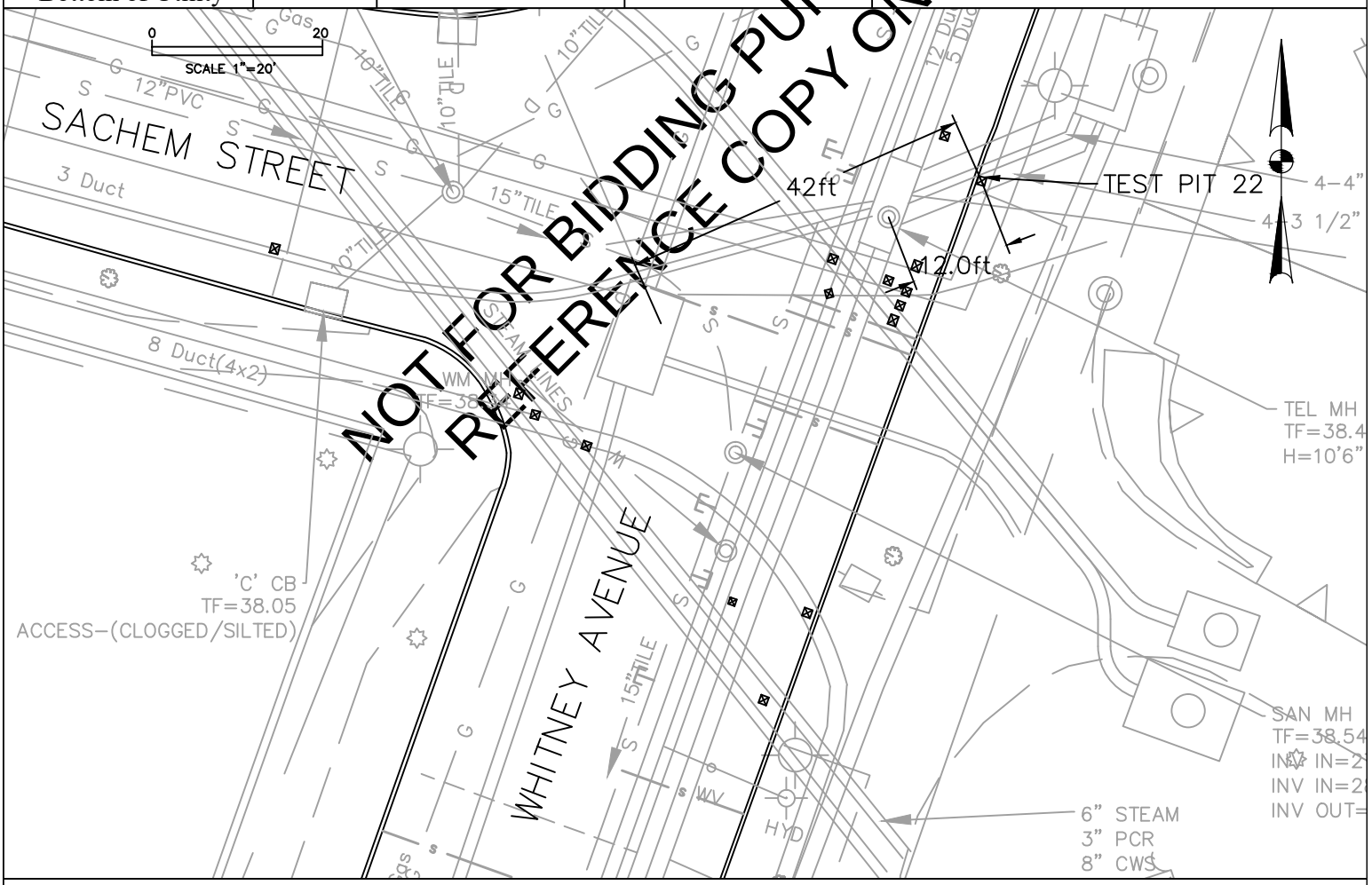
Comments:
Bituminous Concrete= 4.5" (0.375').
Concrete= 9" (0.75')
Test pit shows the edge of the duct bank bend. Duct bank is approximately 4' wide.

Test Pit
No: 22

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 130+00.22	
Purpose: Locate 36" Water				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		39.06'	NA	
Bottom of Pit		34.06'	5.0'	
Top of Utility		NA	NA	
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



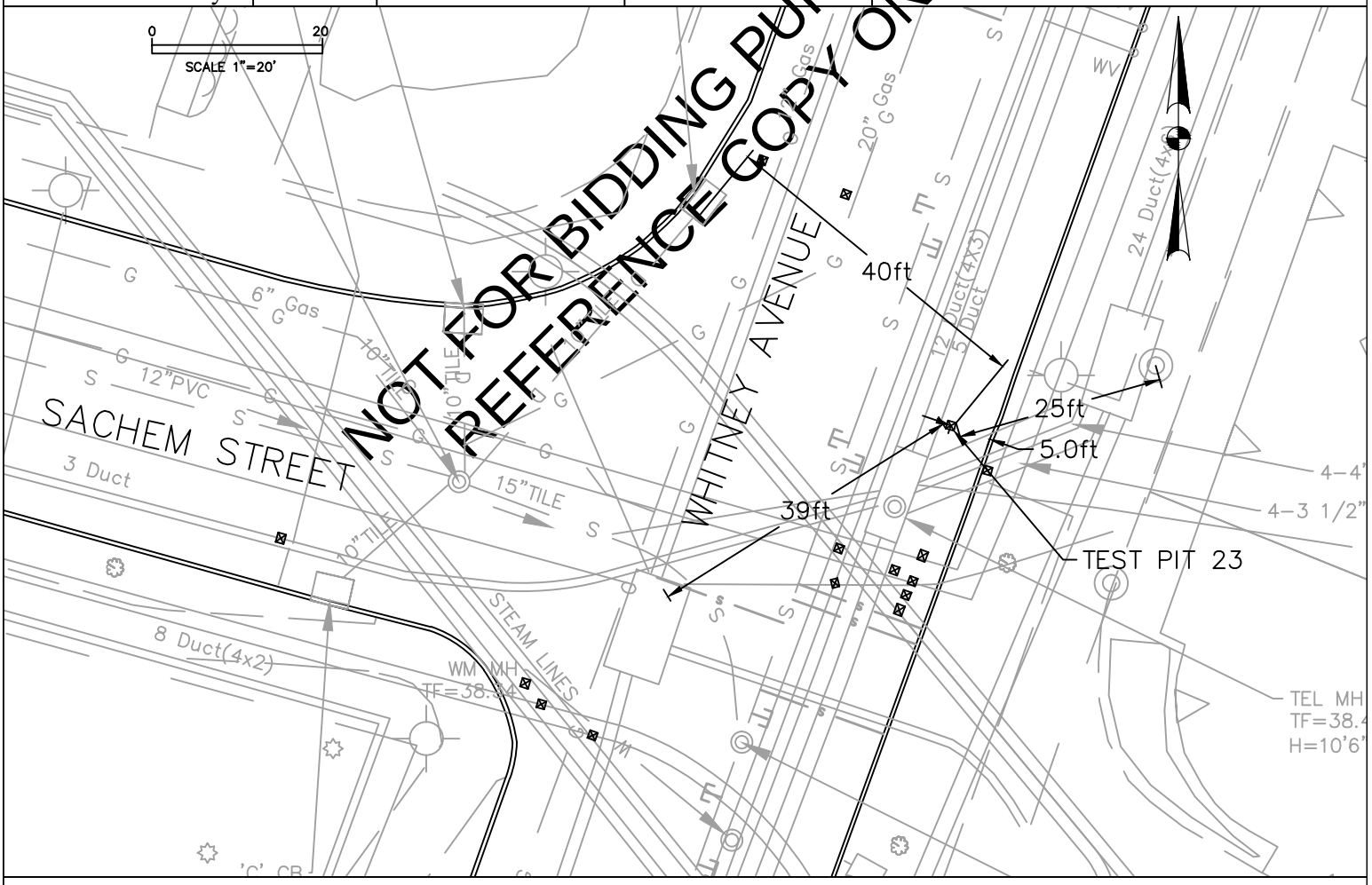
Comments:
Did not find 36" water pipe.
Concrete rubble and pipe fragments found +/- 5' below grade at grass .

Test Pit
No: 23

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 130+03.60	
Purpose: Locate AT&T and Vault				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.64'	NA	
Bottom of Pit		36.14'	2.5'	
Top of Utility		36.64'	2.0'	AT&T Vault
Bottom of Utility		NA	NA	
Top of Utility		36.14'	2.5'	2 side by side 4" AT&T pipes
Bottom of Utility		NA	NA	



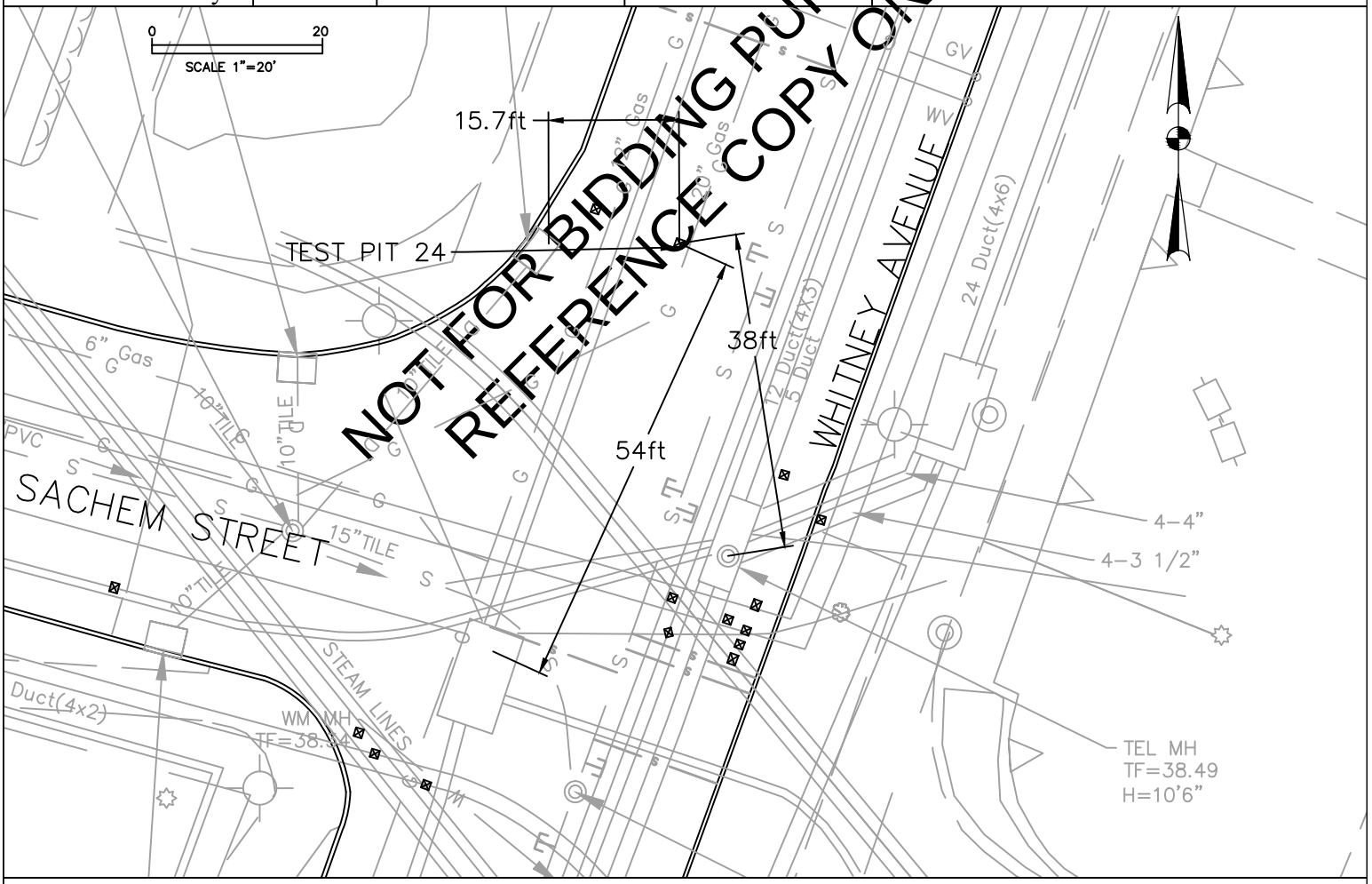
Comments:
Bituminous Concrete= 6" (0.5').
Concrete= +6" (+0.5')

Test Pit
No: 24

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.05A				Station: 130+24.95	
Purpose: Locate 20" Gas				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.62'	NA	
Bottom of Pit		32.87'	5.75'	
Top of Utility		32.87'	5.75'	Concrete encased (?) 20" Gas Pipe
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



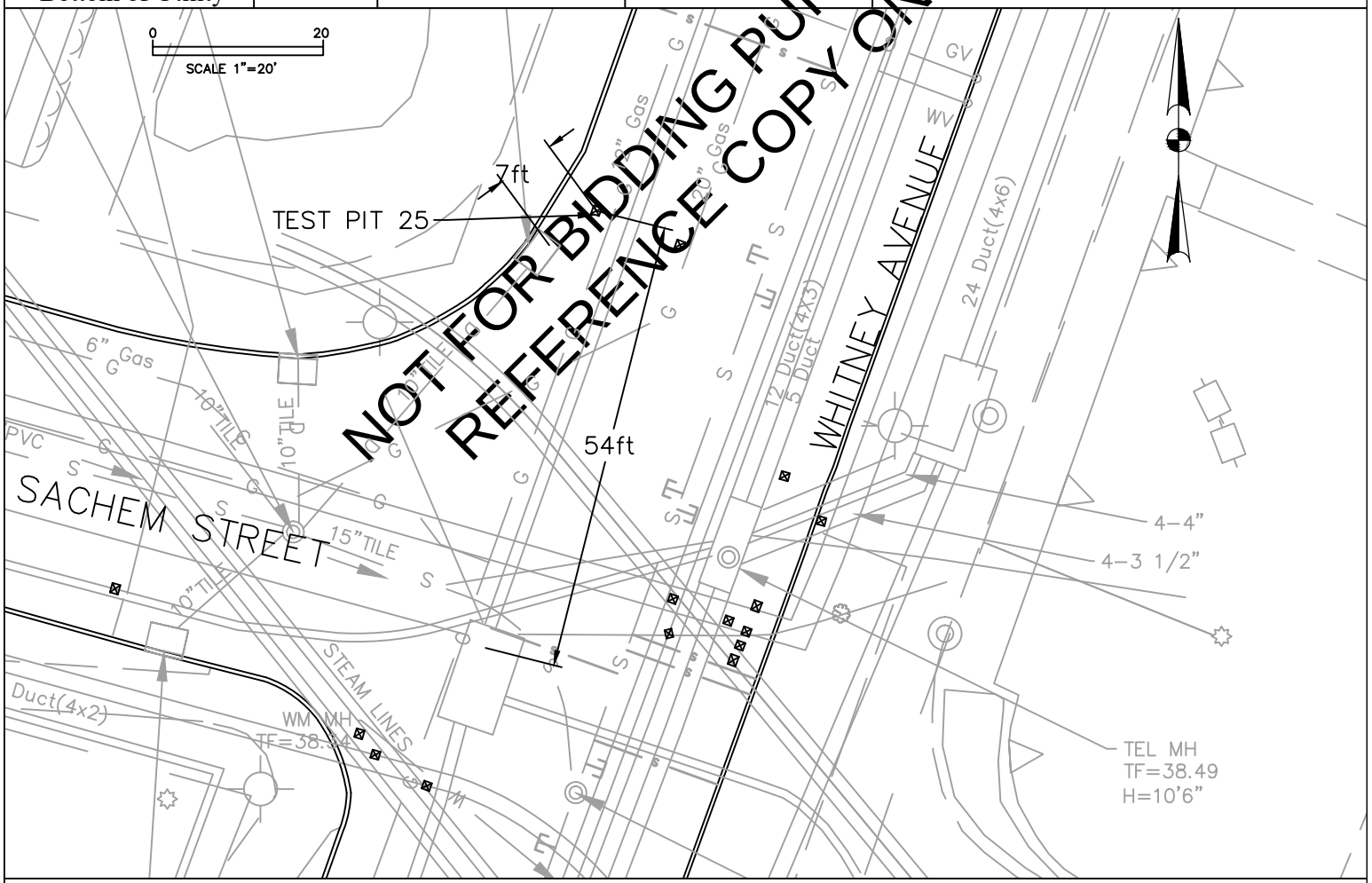
Comments:
Bituminous Concrete= 5" (0.42').
Concrete= 9" (0.75')
Warning tape +/- 3' below grade.

Test Pit
No: 25

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.05A				Station: 130+25.40	
Purpose: Locate 12" Gas				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.20'	NA	
Bottom of Pit		33.70'	4.5'	
Top of Utility		35.40'	2.8'	Concrete encased 12" Gas Pipe
Bottom of Utility		33.70'	4.5'	
Top of Utility				
Bottom of Utility				



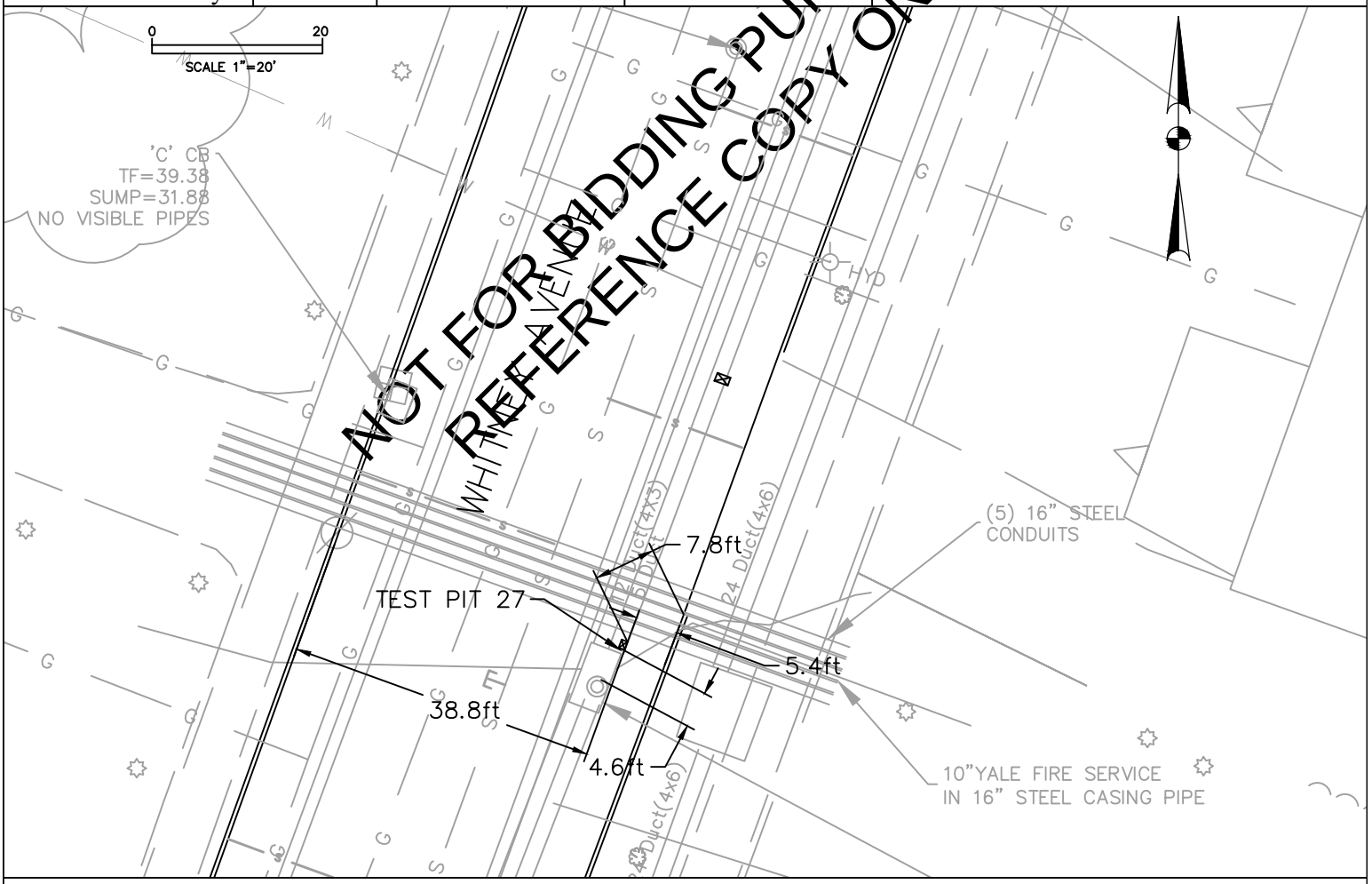
Comments:
Bituminous Concrete= 4" (0.33').
Concrete= 1.33'

Test Pit
No: 27

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.04A				Station: 134+41.53	
Purpose: Locate AT&T				Location: Between 205 and 221 Whitney Avenue	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		39.69'	NA	
Bottom of Pit		36.44'	3.25'	
Top of Utility		36.94'	2.75'	AT&T Pipe
Bottom of Utility			Unknown	
Top of Utility				
Bottom of Utility				



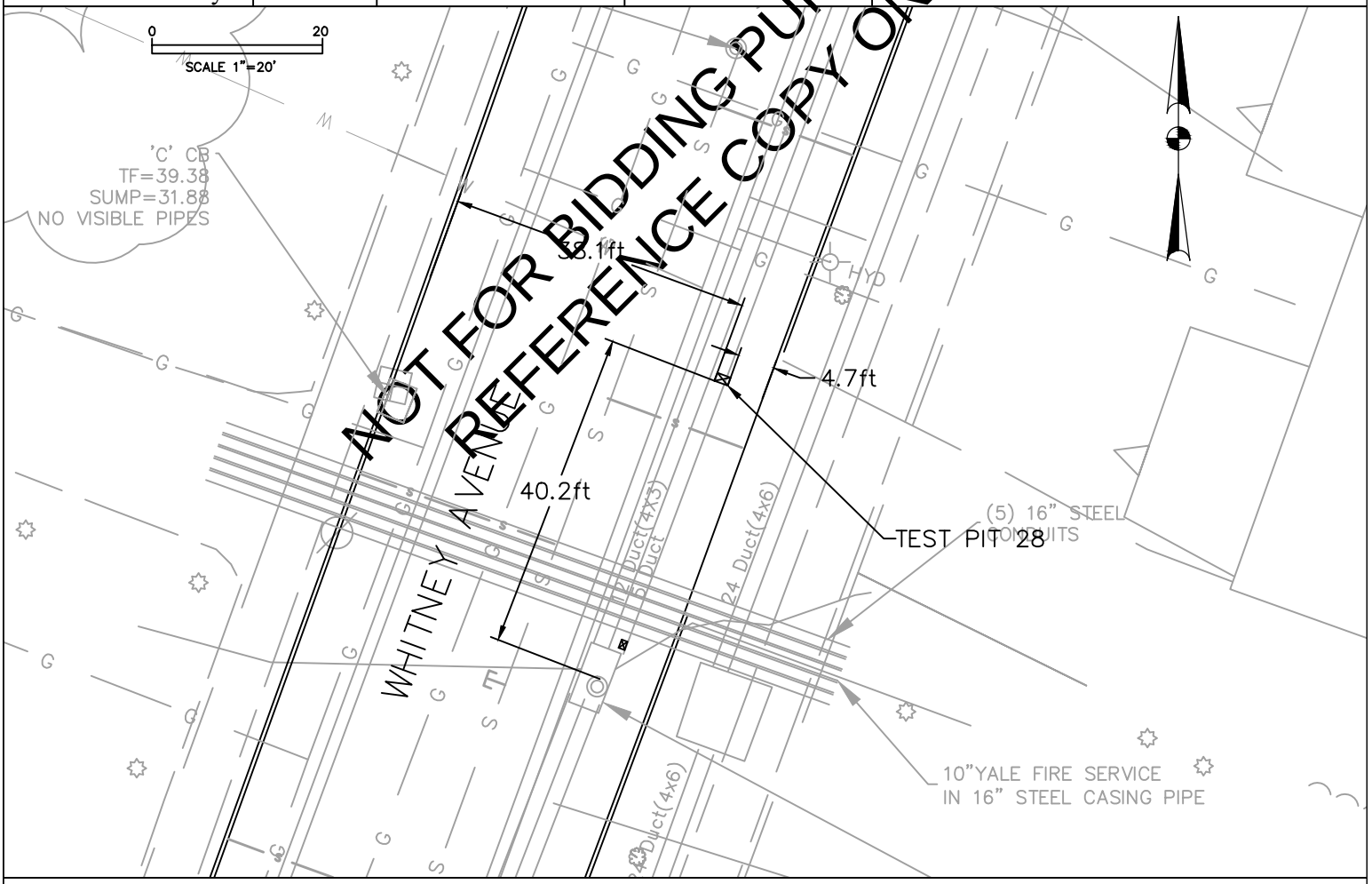
Comments:
Bituminous Concrete Depth = 0.6'
Concrete Depth= 1.0'

Test Pit
No: 28

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.04A				Station: 134+77.19	
Purpose: Locate AT&T				Location: 221 Whitney Avenue	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		39.87'	NA	
Bottom of Pit		36.17'	3.7'	
Top of Utility		37.37'	2.5'	Oval AT&T Duct
Bottom of Utility		37.27'	2.6'	
Top of Utility				
Bottom of Utility				



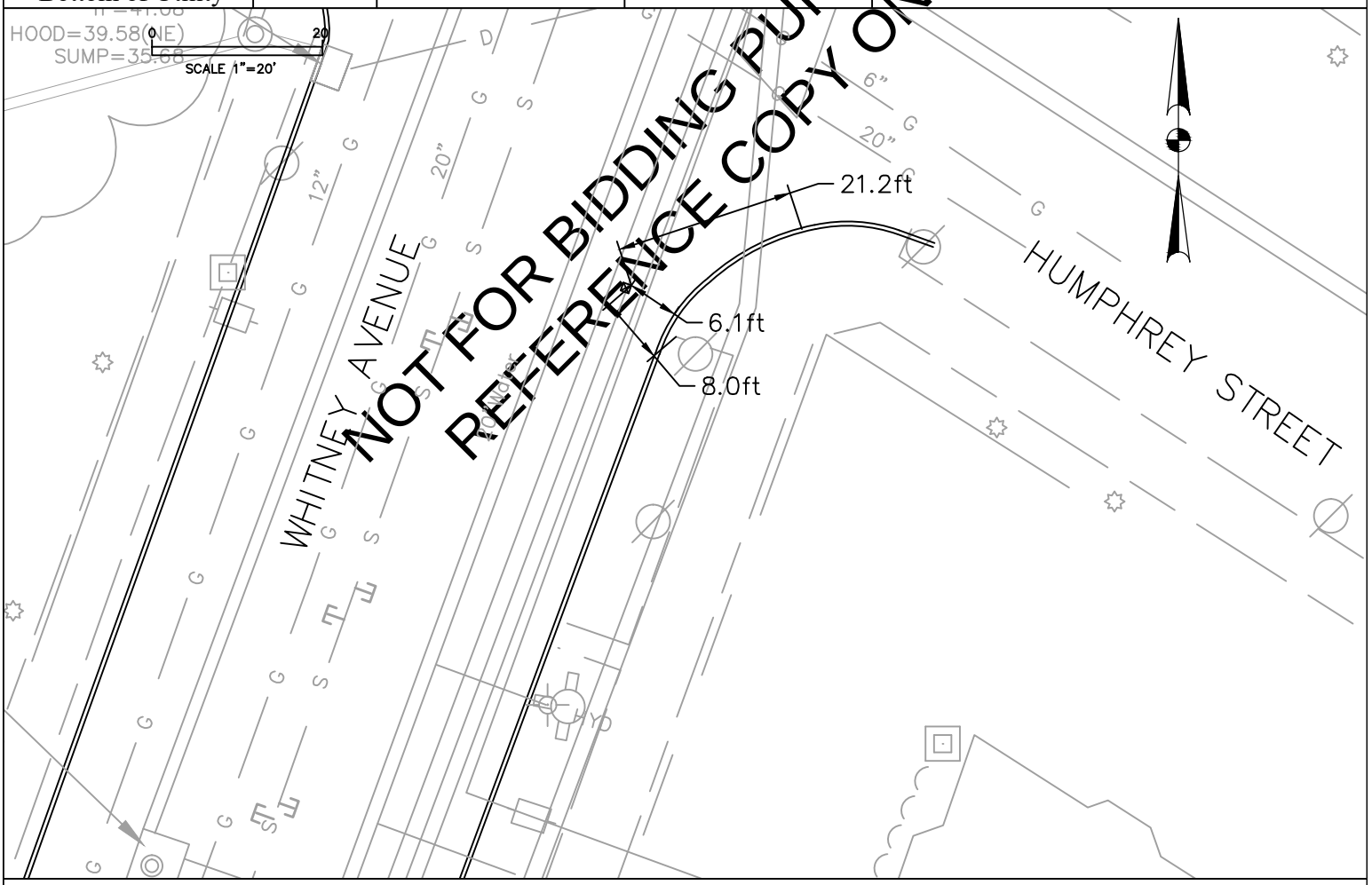
Comments:
Bituminous Concrete Depth = 0.35'
Concrete Depth= 0.85'

Test Pit
No: 29

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.04A				Station: 138+64.31	
Purpose: Locate AT&T				Location: Whitney Avenue/ Humphrey Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		41.14'	NA	
Bottom of Pit		38.94'	2.2'	
Top of Utility		39.24'	1.9'	AT&T
Bottom of Utility		38.94'	2.2'	
Top of Utility				
Bottom of Utility				



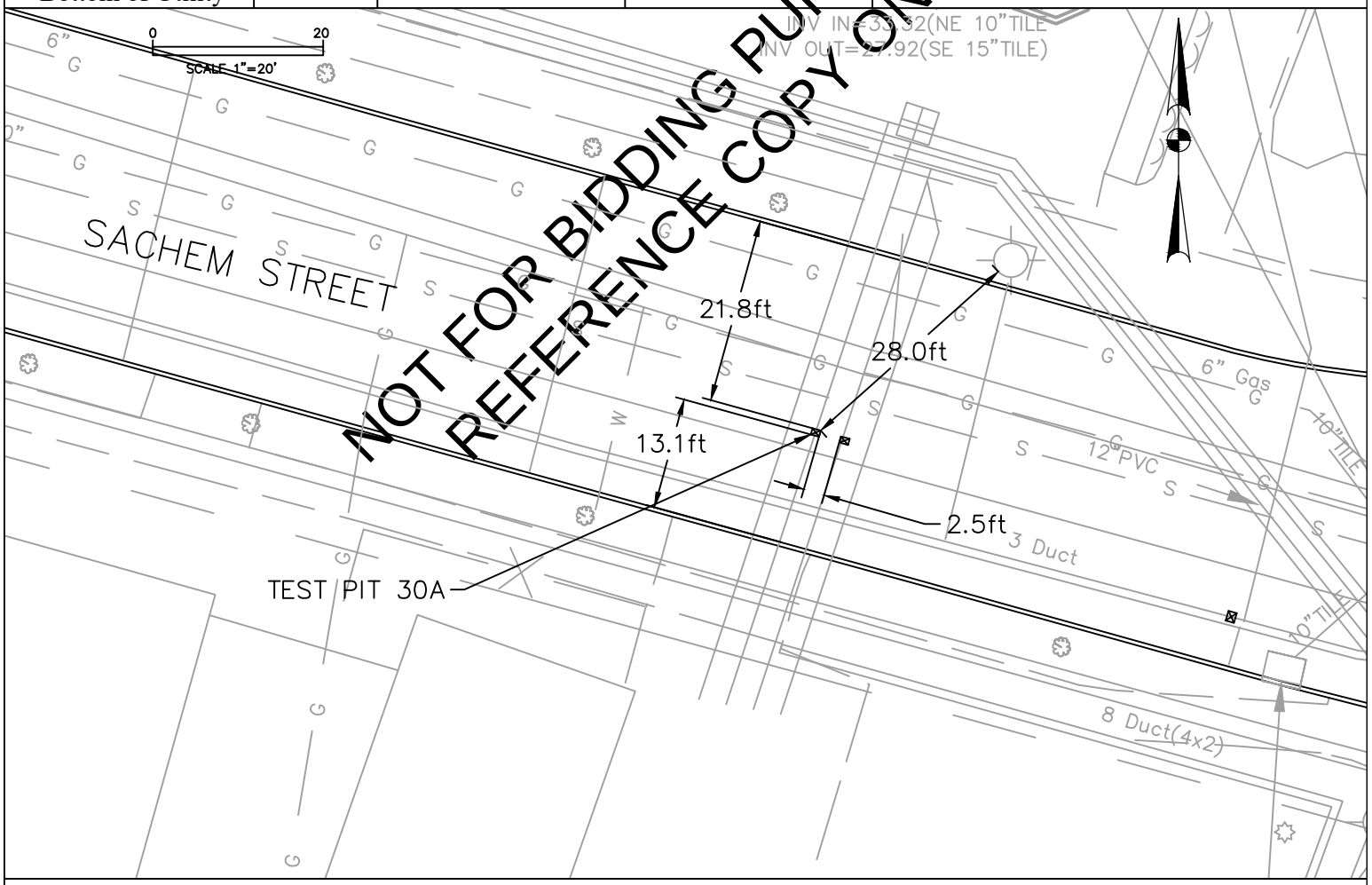
Comments:
Depth to Bituminous Concrete= 0.5'
Depth to Concrete= 1.0'

Test Pit
No: 30A

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A			Contract Number: CWF 2012-04	
Plan Number: TP.05A			Station: 21+16.03	
Purpose: Locate Steam Pipes			Location: Sachem Street	
BM:	Elevation:		Pay Item No.:	Quantity:
√:	Elevation:			
	BS:			

	FS:	Elevation	Depth	Description
Top of Ground		39.21'	NA	
Bottom of Pit		31.21'	8.0'	
Top of Utility		32.91'	6.3'	Wooden Duct, unknown utility
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



Comments:
Bituminous Concrete Depth = 0.7'
Steam pipe was not found, but a wooden duct was found at a depth of 6.3'.

Test Pit
No: 30B

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.05A				Station: 21+12.52	
Purpose: Locate Steam Pipes				Location: Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		39.18'	NA	
Bottom of Pit		29.18'	10.0'	
Top of Utility		NA	NA	
Bottom of Utility				
Top of Utility				
Bottom of Utility				

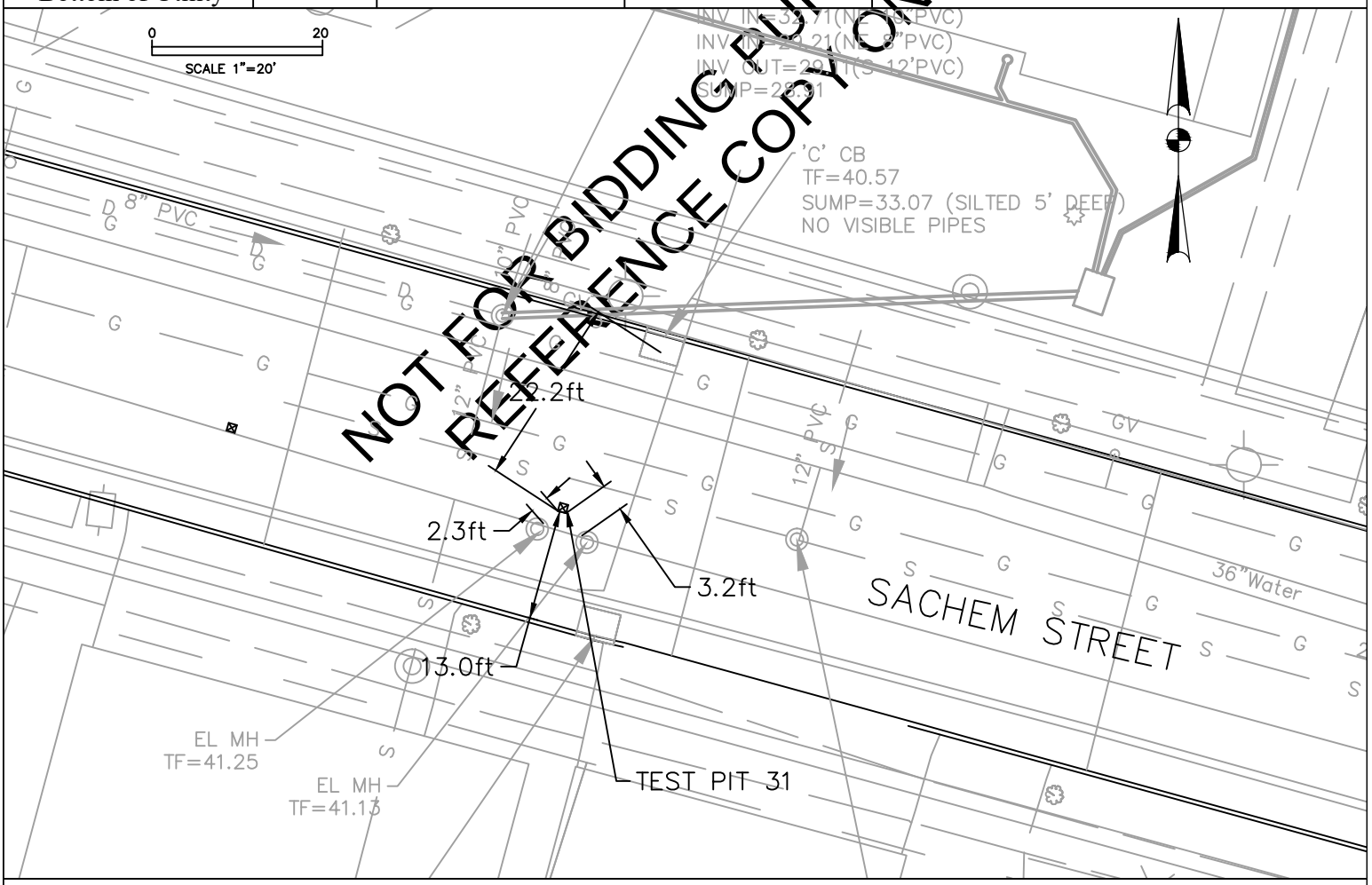
Comments:
Bituminous Concrete Depth = 0.7'
Steam pipe was not found.

Test Pit
No: 31

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.05A				Station: 23+13.52	
Purpose: Locate Electric				Location: Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		41.30'	NA	
Bottom of Pit		36.30'	5.0'	
Top of Utility		39.30'	2.0'	Concrete Electric Structure
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



Comments:
Bituminous Concrete Depth = 0.6'

Test Pit
No: 32

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.05A				Station: 23+53.49	
Purpose: Locate Electric				Location: Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		42.71'	NA	
Bottom of Pit		39.11'	3.6'	
Top of Utility		39.61'	3.1'	Electric Pipe (4" to 6")
Bottom of Utility		39.11'	3.6'	
Top of Utility				
Bottom of Utility				

Comments:
Bituminous Concrete Depth = 0.6'
Electric Pipe was about 1.0' south of test pit boundaries.

Test Pit
No: 33

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.05A				Station: 43+37.96	
Purpose: Locate AT&T				Location: Whitney Avenue	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		29.70	NA	
Bottom of Pit		26.10'	3.6'	
Top of Utility		26.30'	3.4'	Two White AT&T pipes
Bottom of Utility		26.10'	3.6'	
Top of Utility				
Bottom of Utility				

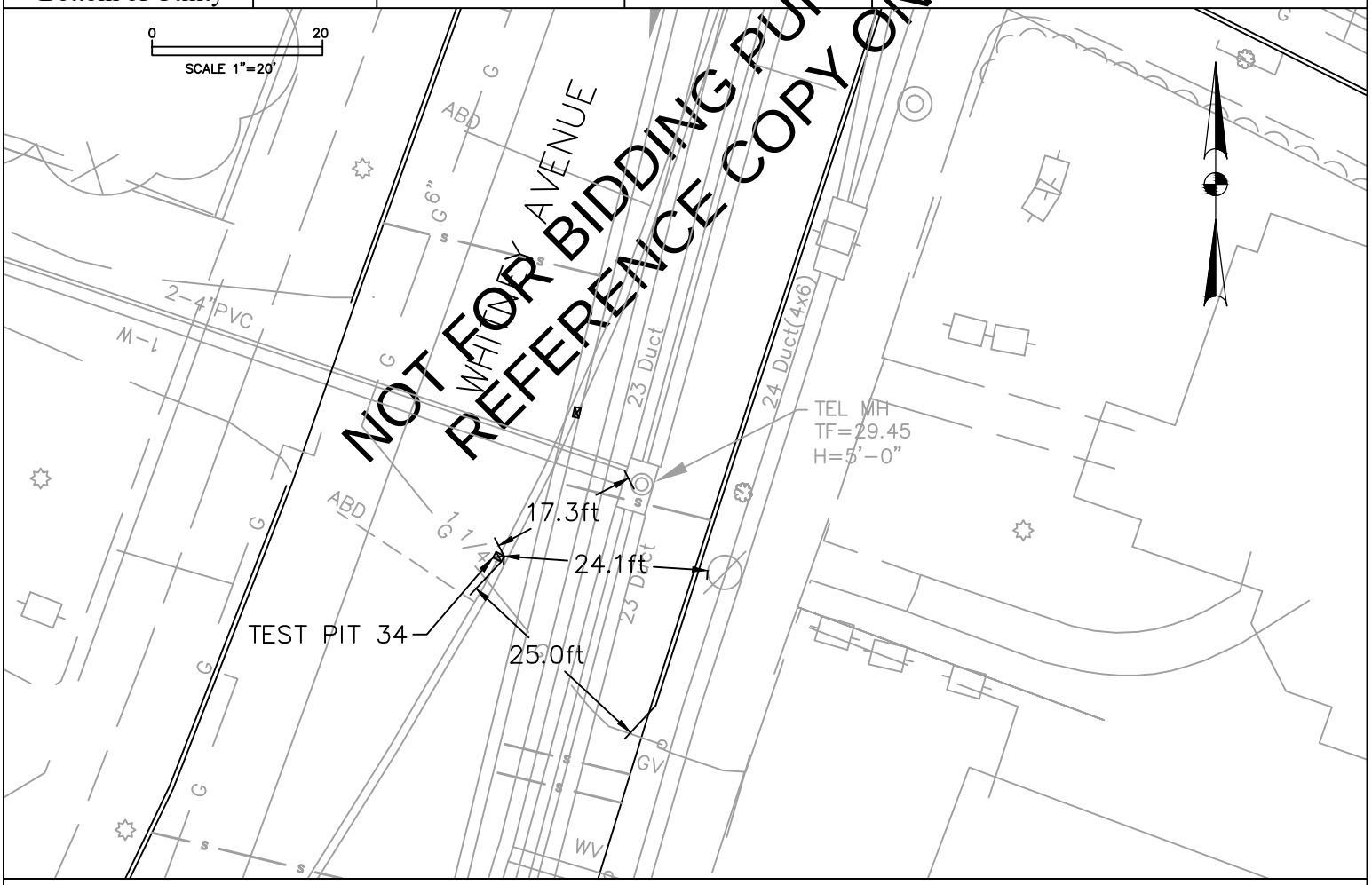
Comments:
Depth to Bituminous Concrete= 0.55'
Depth to Concrete= 1.0'
Opened AT&T Manhole to find adjacent AT&T pipes.

Test Pit
No: 34

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.05A				Station: 43+19.13	
Purpose: Locate AT&T				Location: 114 Whitney Avenue	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		29.58'	NA	
Bottom of Pit		27.08'	2.5'	
Top of Utility		27.08'	2.5'	Gas Pipe
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



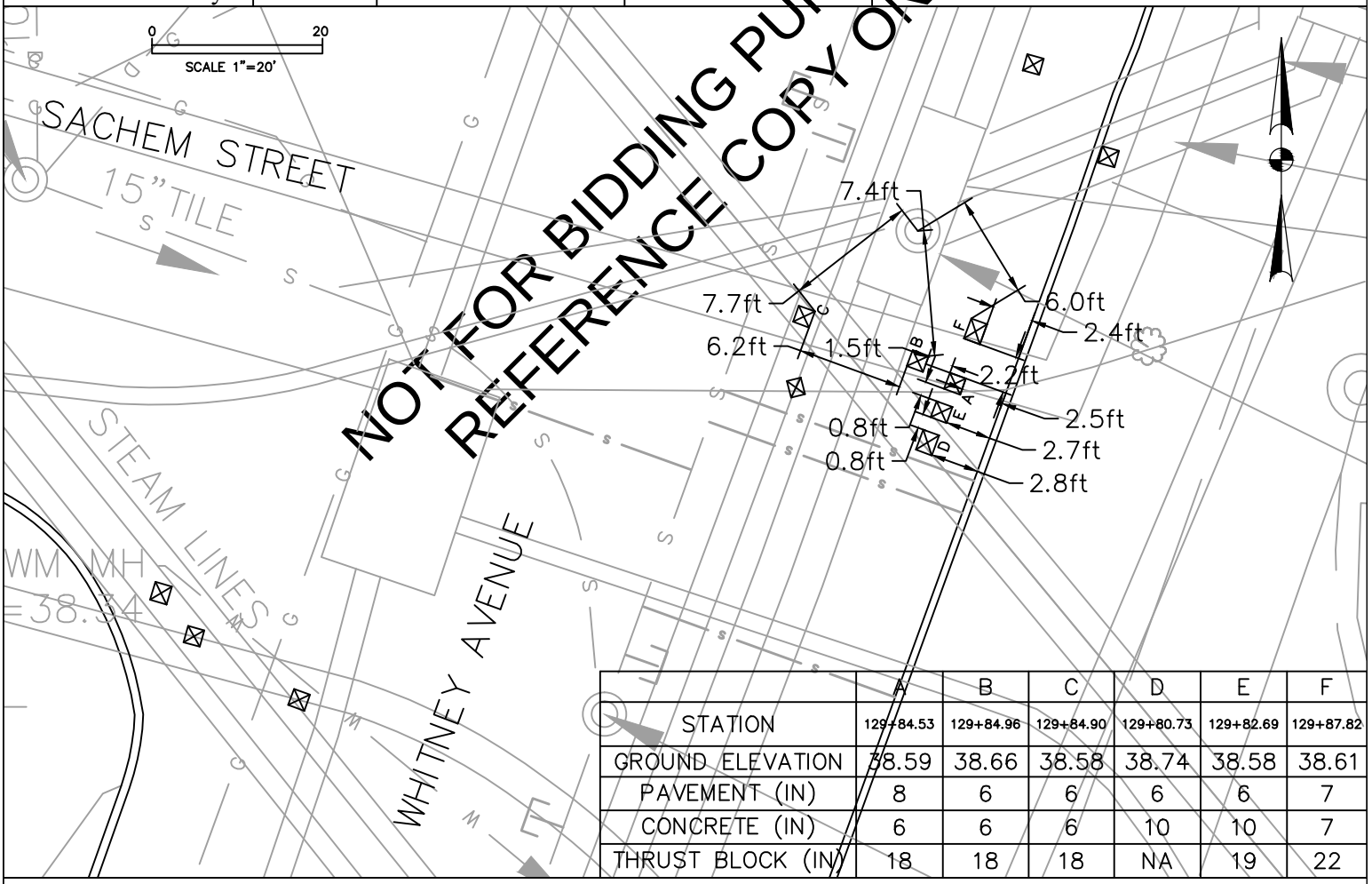
Comments:
Depth to Bituminous Concrete= 0.55'
Depth to Concrete= 0.95'
Did not find AT&T.

Test Pit
No: 1B

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station:	
Purpose: Locate 36" Water and Thrust Block				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		NA	NA	
Bottom of Pit		NA	NA	
Top of Utility				
Bottom of Utility				
Top of Utility				
Bottom of Utility				



	A	B	C	D	E	F
STATION	129+84.53	129+84.96	129+84.90	129+80.73	129+82.69	129+87.82
GROUND ELEVATION	38.59	38.66	38.58	38.74	38.58	38.61
PAVEMENT (IN)	8	6	6	6	6	7
CONCRETE (IN)	6	6	6	10	10	7
THRUST BLOCK (IN)	18	18	18	NA	19	22

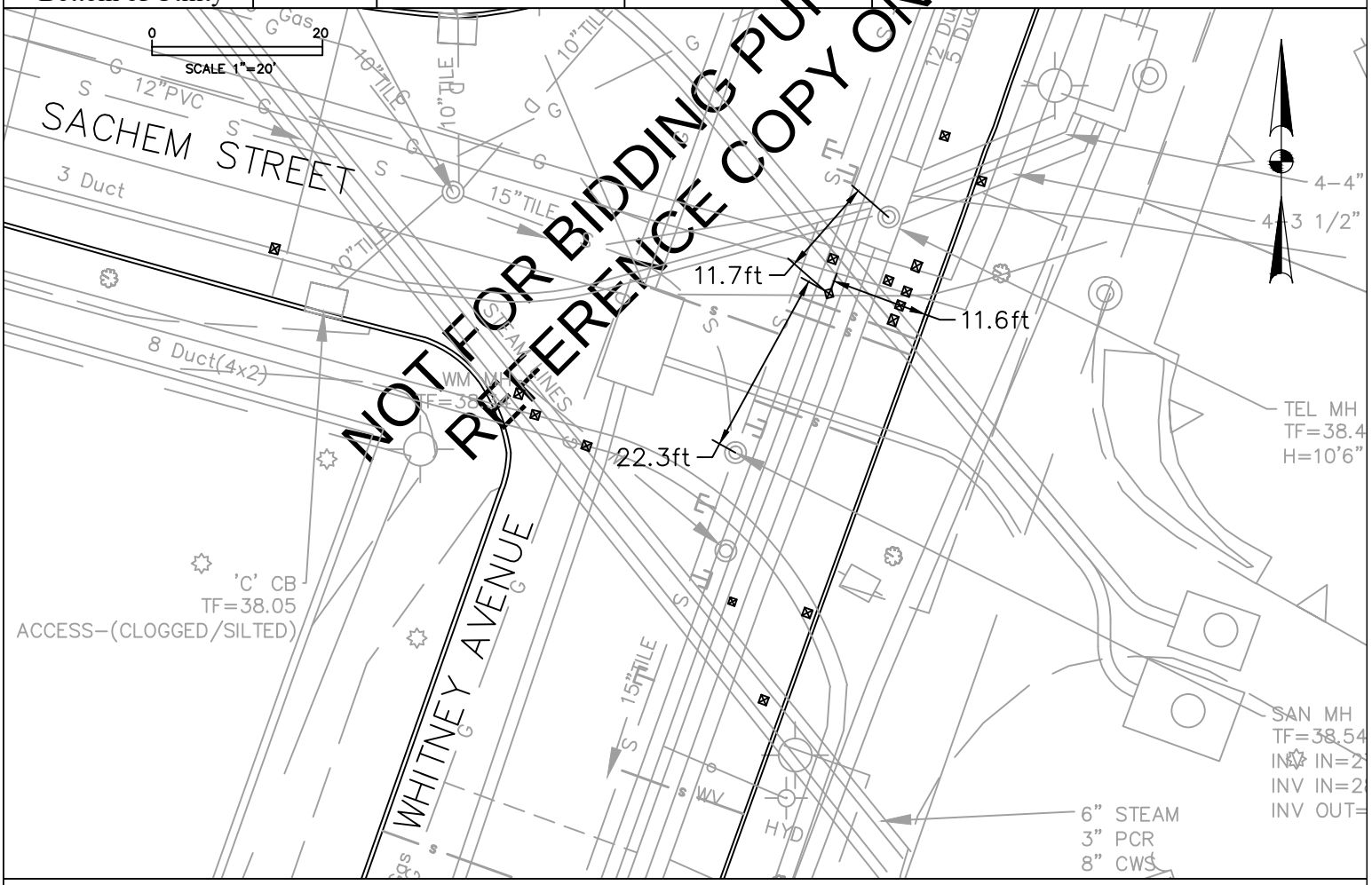
Comments:
Did not locate 36" water. Found top of concrete thrust block.

Test Pit
No: 2B

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 129+80.86	
Purpose: Locate Yale Electric/Telephone				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.72'	NA	
Bottom of Pit			NA	
Top of Utility		37.22'	1.5'	To top of conduit
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



Comments:
Bituminous Concrete= 6" (0.5').
Concrete= 6" (0.5')

Test Pit
No: 3B

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 128+40.13	
Purpose: Locate Yale Fire Service				Location: Whitney Avenue	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		37.39'	NA	
Bottom of Pit				
Top of Utility		30.39'	7.0'	
Bottom of Utility				
Top of Utility				
Bottom of Utility				

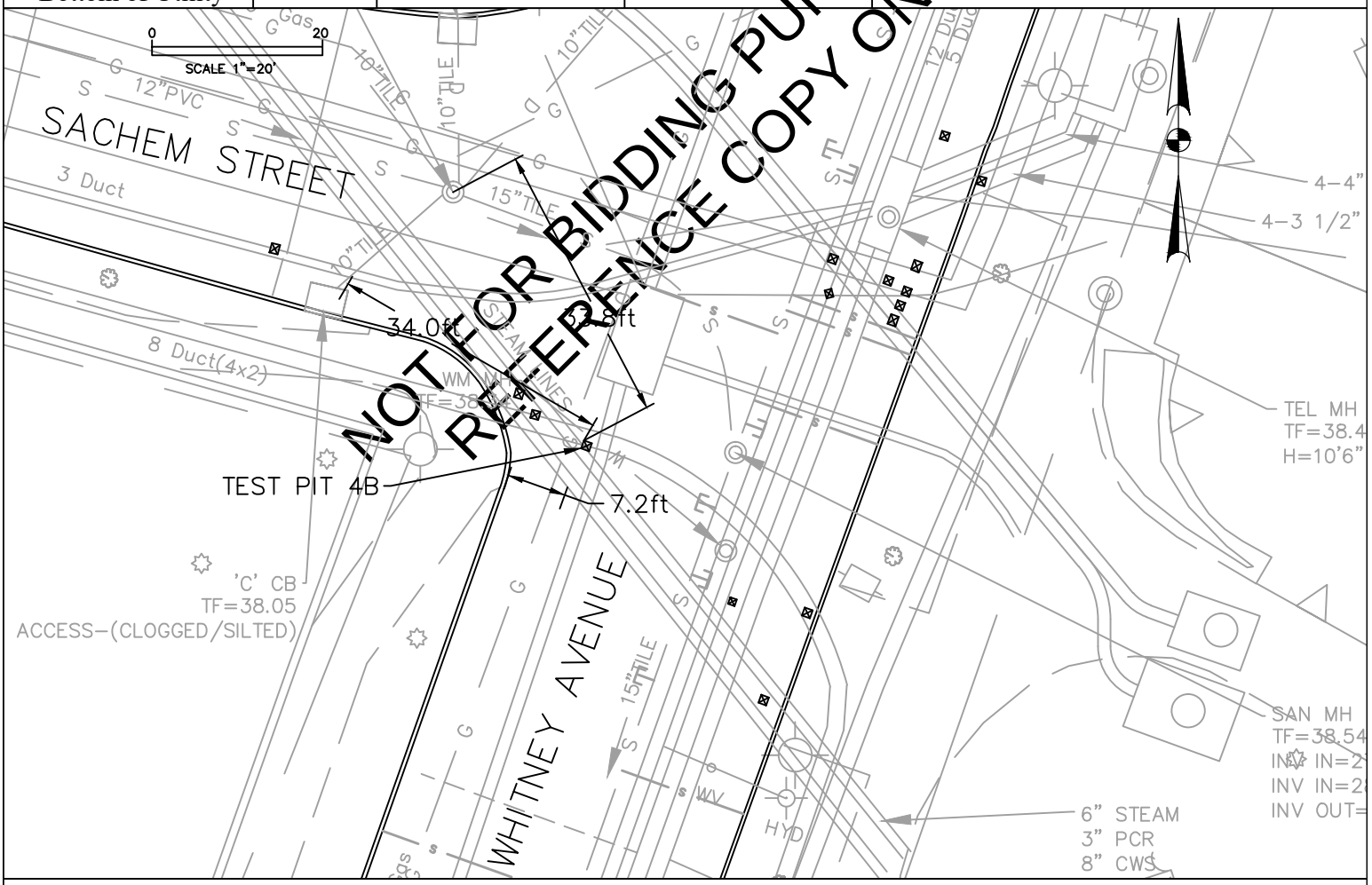
Comments:
Bituminous Concrete= 5" (0.42').
Concrete= 10" (0.83')

Test Pit
No: 4B

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 129+53.06	
Purpose: Locate Electric				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.26'	NA	
Bottom of Pit				
Top of Utility		35.76	2.5'	
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



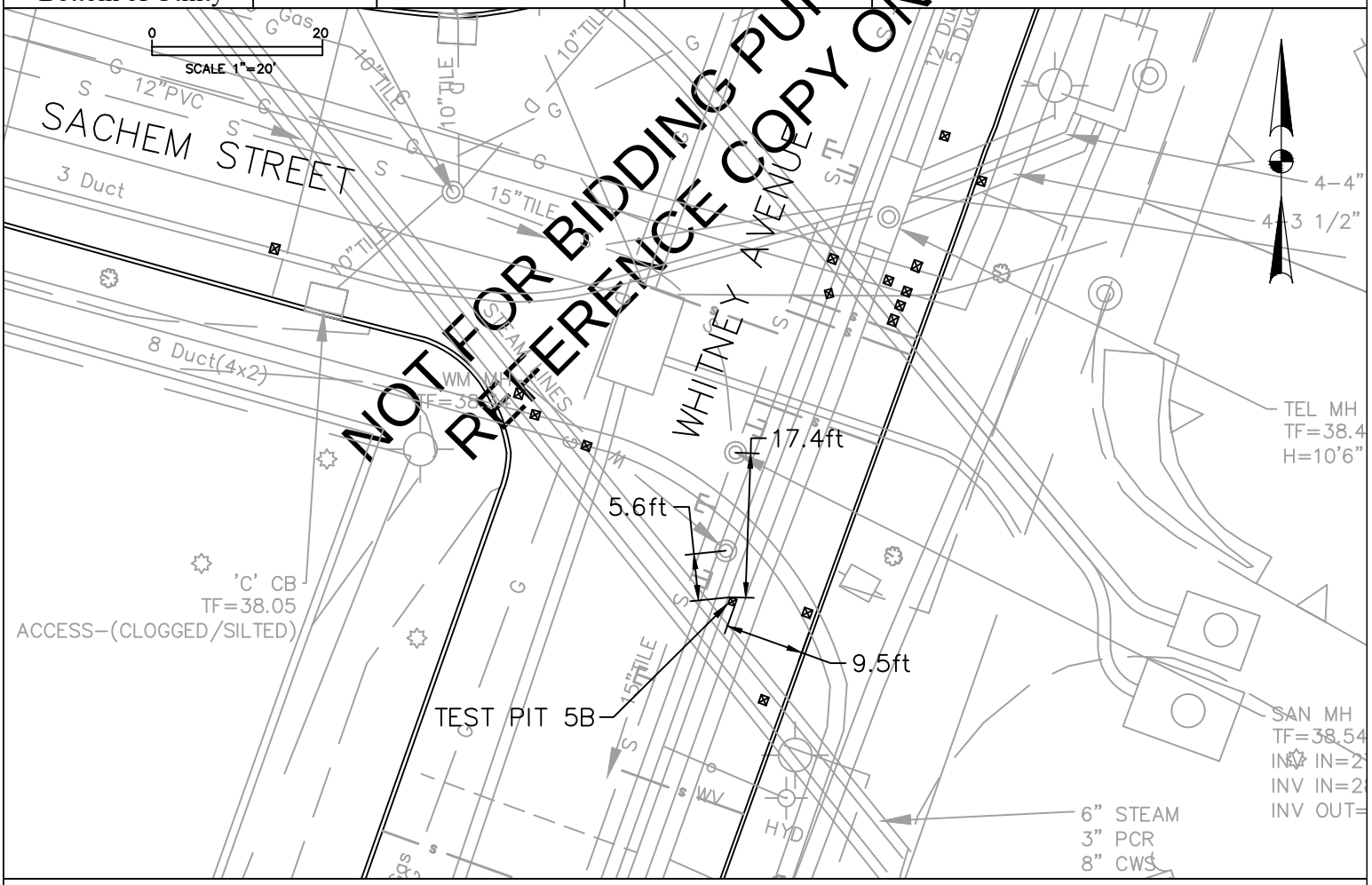
Comments:
Bituminous Concrete= 6" (0.5').
Concrete= 8" (0.67')

Test Pit
No: 5B

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.03A				Station: 129+42.17	
Purpose: Locate 20" Water				Location: Whitney Avenue near Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.28'	NA	
Bottom of Pit			NA	
Top of Utility		33.28'	5.0'	
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



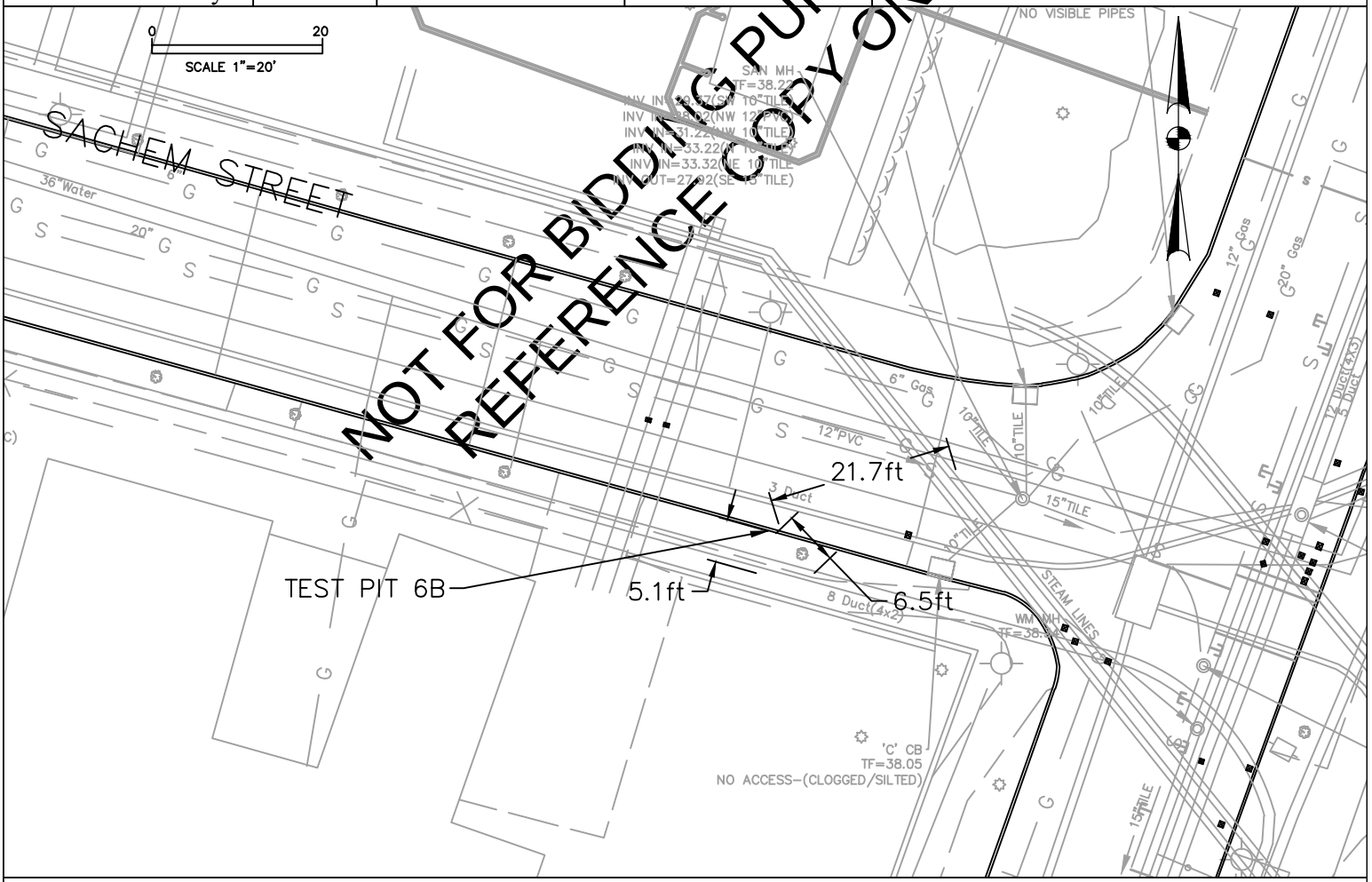
Comments:
Bituminous Concrete= 6" (0.5').
Concrete= 7" (0.58')

Test Pit
No: 6B

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVE HAMDEN CT 06518
203 239 4200 203 234 7376 FAX

Project Name: Trumbull Street Phase 2A				Contract Number: CWF 2012-04	
Plan Number: TP.05A				Station: 20+59.15	
Purpose: Locate AT&T Duct				Location: Sachem Street	
BM:		Elevation:		Pay Item No.:	Quantity:
√:		Elevation:			
		BS:			

	FS:	Elevation	Depth	Description
Top of Ground		38.28'	NA	
Bottom of Pit				
Top of Utility		34.78'	3.5'	
Bottom of Utility		NA	NA	
Top of Utility				
Bottom of Utility				



Comments:
Bituminous Concrete Depth = 0.7'

APPENDIX C

Bioswales

LIST OF DRAWINGS

LAYOUTS (47 PAGES)

GENERAL NOTES

PART 1 - GENERAL

1.1 Symbols and legends of project features are graphic representations and are not necessarily shown on the drawings to scale or to their actual dimension or location. Coordinate detail sheet dimensions, manufacturer's literature, shop drawings, and field measurements of supplied products for layout of the project features.

1.2 Do not rely solely on electronic versions of drawings, specifications, and data files that are provided by the Engineer. Field verify location of project features.

1.3 Perform necessary construction notifications, apply for and obtain necessary permits, pay fees and post bonds associated with the work as required by the Contract Documents.

PART 2 - WORK RESTRICTIONS

2.1 Do not close or obstruct roadways, sidewalks, fire hydrants, and utilities without appropriate permits.

2.2 Work is restricted to the hours of 7:00AM to 7:00PM on Monday through Friday. Unless allowed by a City of New Haven permit.

PART 3 - REGULATORY REQUIREMENTS

3.1 Within local rights-of-way, perform work in accordance with local municipal standards.

3.2 Provide traffic signage and pavement markings in conformance with the latest edition of the manual of uniform traffic control devices.

3.3 Be responsible for site security and job safety. Perform construction activities in accordance with OSHA standards and local requirements.

3.4 Dispose of demolition debris in accordance with applicable federal, state, and local regulations, ordinances, and statues.

PART 4 - CONSTRUCTION LAYOUT

4.1 The Contractor shall stake in the field proposed green solution locations in areas identified by the Engineer. The locations stake out will include marking the area limits fully, with white paint in accordance with CBYD requirements, notifying CBYD, and placement of a Green Solution Identification Marker at the site. Based upon the results of the stakeout, the Engineer

will advise the Contractor whether to construct that Green Solution or delete it. If it is deleted, the Contractor will remove the Green Solution Identification Marker. The cost of Stakeout, markers and notifications to CBYD will be included in the item for Mobilization. There will be no additional payment for Bioswales that have been staked out and subsequently deleted.

4.2 Provide proper transitions between existing and proposed site improvements. Field verify existing pavement and ground elevations at the interface with proposed pavements and drainage structures before start of construction.

4.3 Prior to ordering materials and beginning construction, field verify proposed utility routes and identify existing utilities or public rights-of-way.

4.4 Immediately inform the Engineer in writing if existing utility conditions conflict or differ from that indicated and if the work cannot be complete as indicated.

4.5 Bounds or monumentation disturbed during construction shall be set or reset by a Professional Licensed Surveyor.

PART 5 - EARTHWORK

5.1 Notify utility locater service at least 72 hours before starting excavation:

A. CT – "Call Before You Dig" at 811

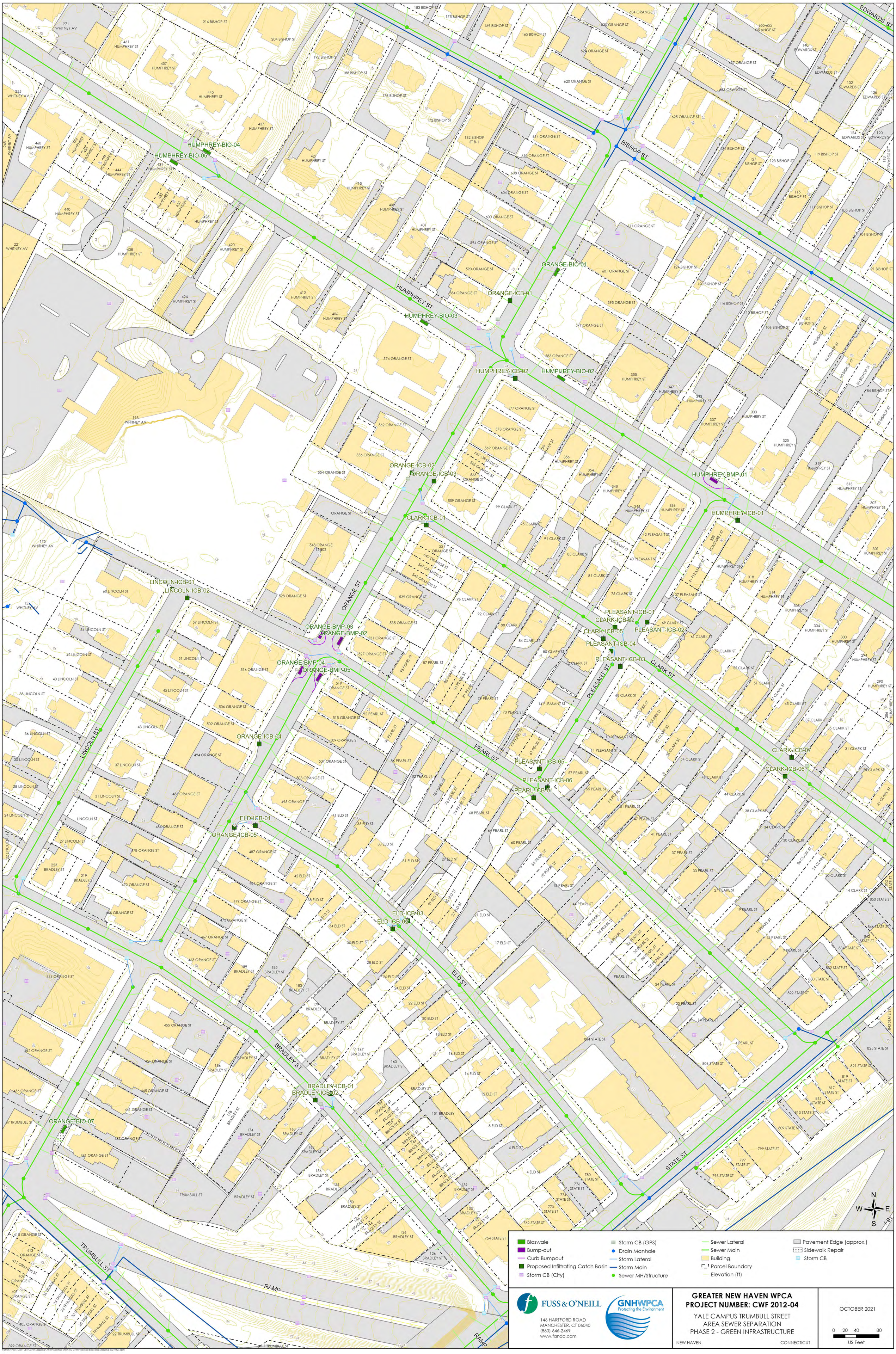
5.2 Stop work in the vicinity of suspected contaminated soil, groundwater or other media. Immediately notify the Engineer so that appropriate testing and subsequent action can be taken. Resume work in the immediate vicinity only upon direction by the Engineer.

PART 6 - SITE RESTORATION

6.1 Provide 6 inches of topsoil and seed to areas disturbed during construction and not designated to be restored with impervious surfaces (buildings, pavements, walks, etc.) unless otherwise noted.

6.2 Repair damages resulting from construction loads, at no additional cost to the Owner.

6.3 Restore area disturbed by construction operations to their original condition or better, at no additional cost to the Owner.



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YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

OCTOBER 2021

0 20 40 80
US Feet

AVON ST
COTTAGE ST
FOSTER ST
EAGLE ST
WILLOW ST
NICOLL ST
NASH ST
LAWRENCE ST
MECHANIC ST
EDWARDS ST
STATE ST
HINE PL
BISHOP ST
BEECH ST
EAST ST
HUMPHREY ST
MILL RIVER ST
I-91
RAMP
NASH-ICB-01
NASH-BIO-01
NASH-ICB-02
NASH-ICB-03
NASH-ICB-04
NASH-ICB-05
NASH-ICB-06
NASH-ICB-07
NASH-ICB-08
NASH-ICB-09
MECHANIC-ICB-01
MECHANIC-ICB-02
MECHANIC-ICB-03
MECHANIC-ICB-04
LAWRENCE-BMP-01
LAWRENCE-BMP-02
STATE-ICB-01
STATE-ICB-02
STATE-ICB-03
STATE-ICB-04
STATE-BIO-01
EDWARDS-BIO-01
EDWARDS-BIO-03
EDWARDS-ICB-01
EAST-ICB-01
N
W
E
S
Bioswale
Bump-out
Curb Bumpout
Proposed Infiltrating Catch Basin
Storm CB (City)
Storm CB (GPS)
Drain Manhole
Storm Outfall
Storm Lateral
Storm Main
Sewer MH/Structure
Sewer Lateral
Sewer Main
Building
Parcel Boundary
Elevation (ft)
Pavement Edge (approx.)
Sidewalk Repair
Storm CB
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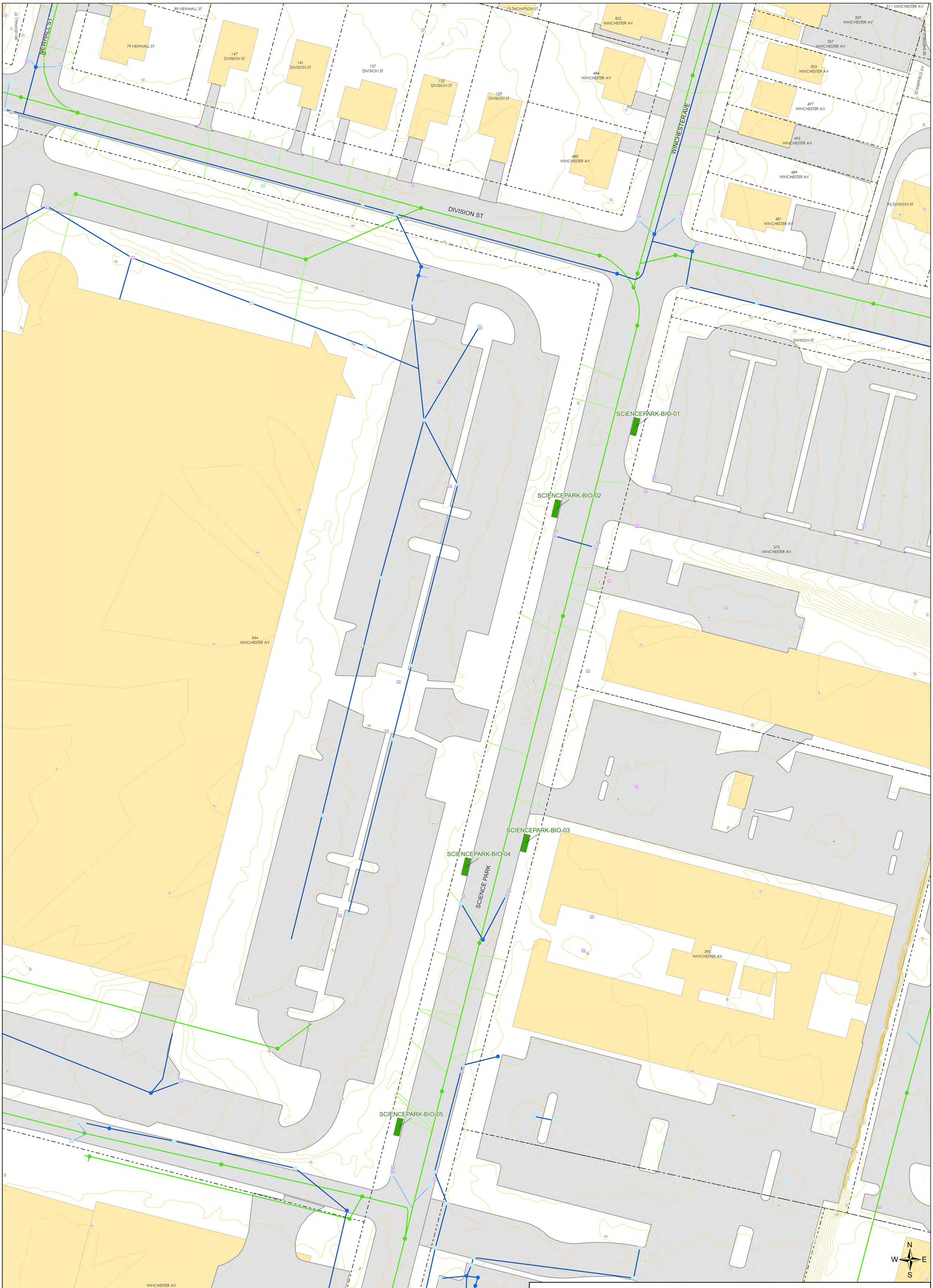
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN
CONNECTICUT
OCTOBER 2021
0 20 40 80
US Feet



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AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

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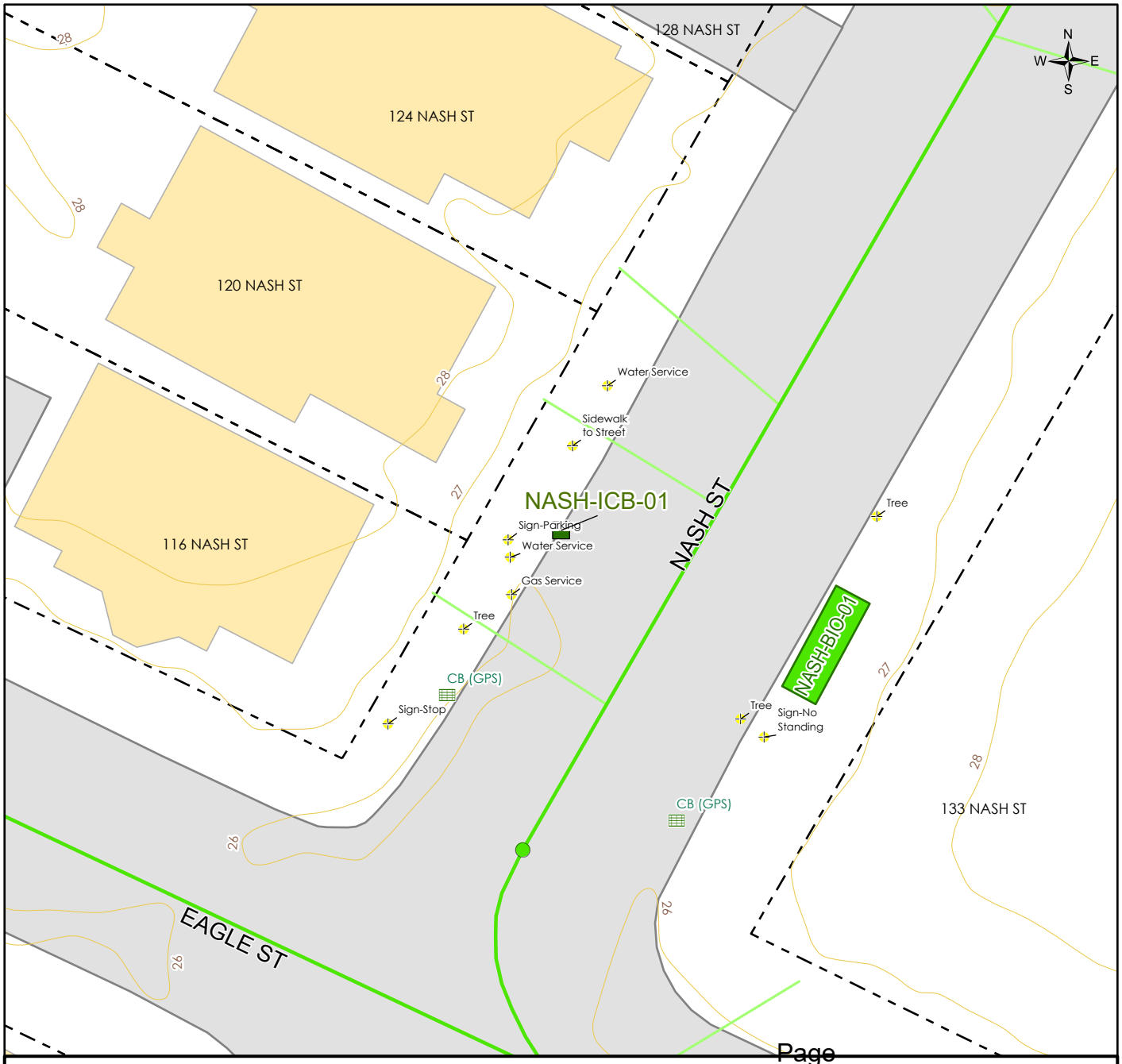
OCTOBER 2021

0 10 20 40
US Feet



Page

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
NASH-ICB-01

OCTOBER 2021

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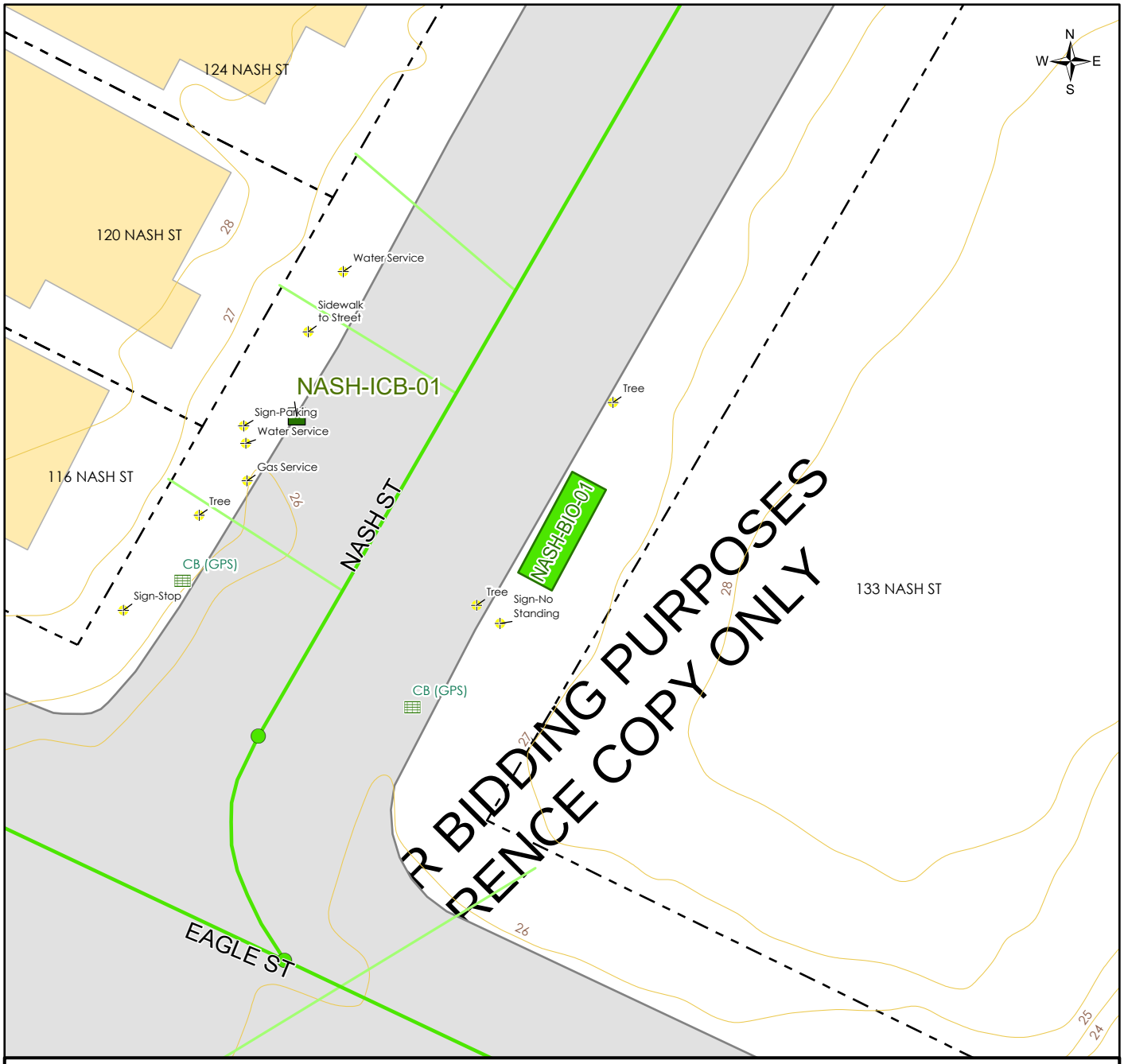

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 10'11"
SAWCUT: Yes; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
NASH-BIO-01

OCTOBER 2021

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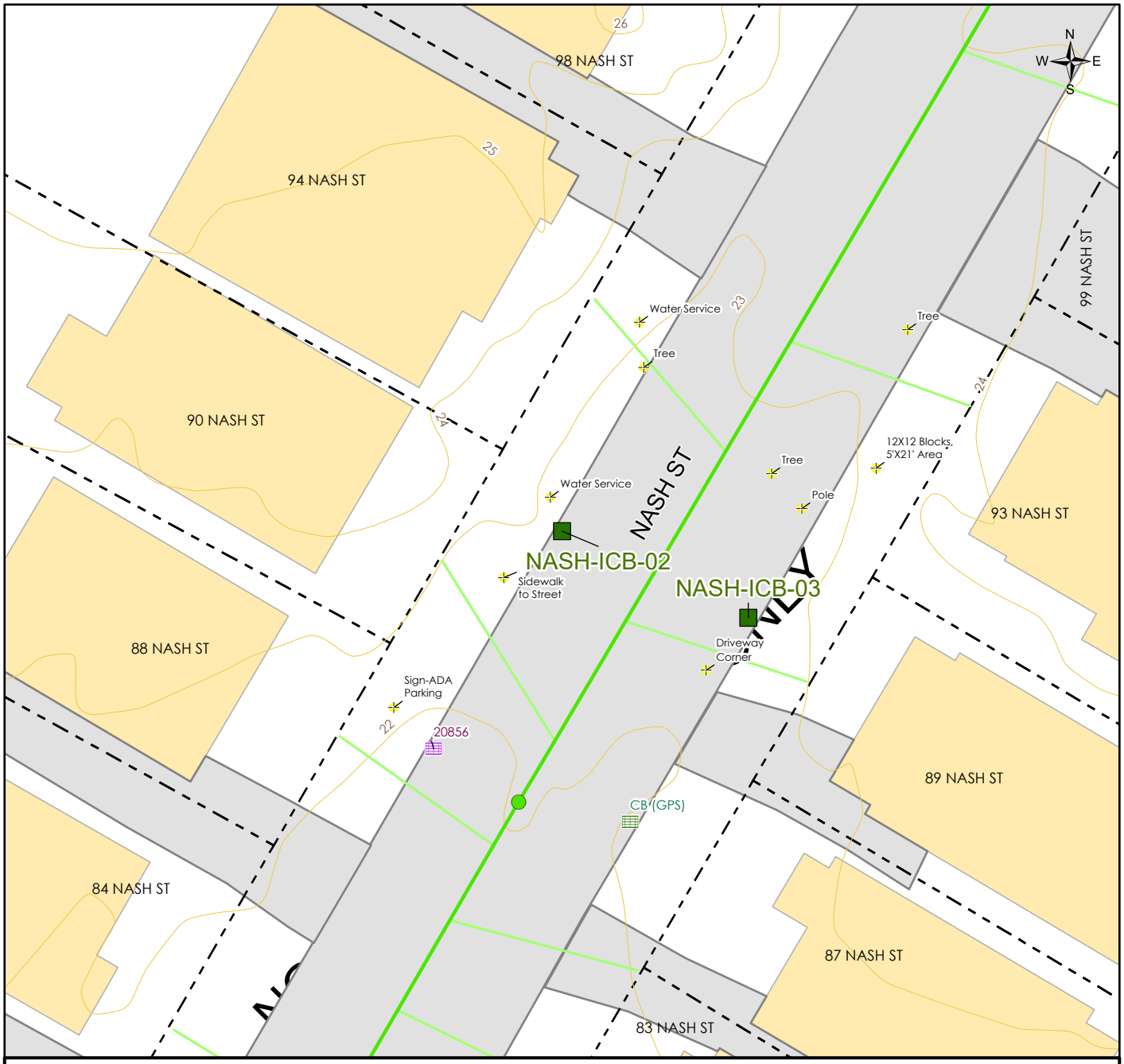

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
NASH-ICB-02;
NASH-ICB-03

OCTOBER 2021

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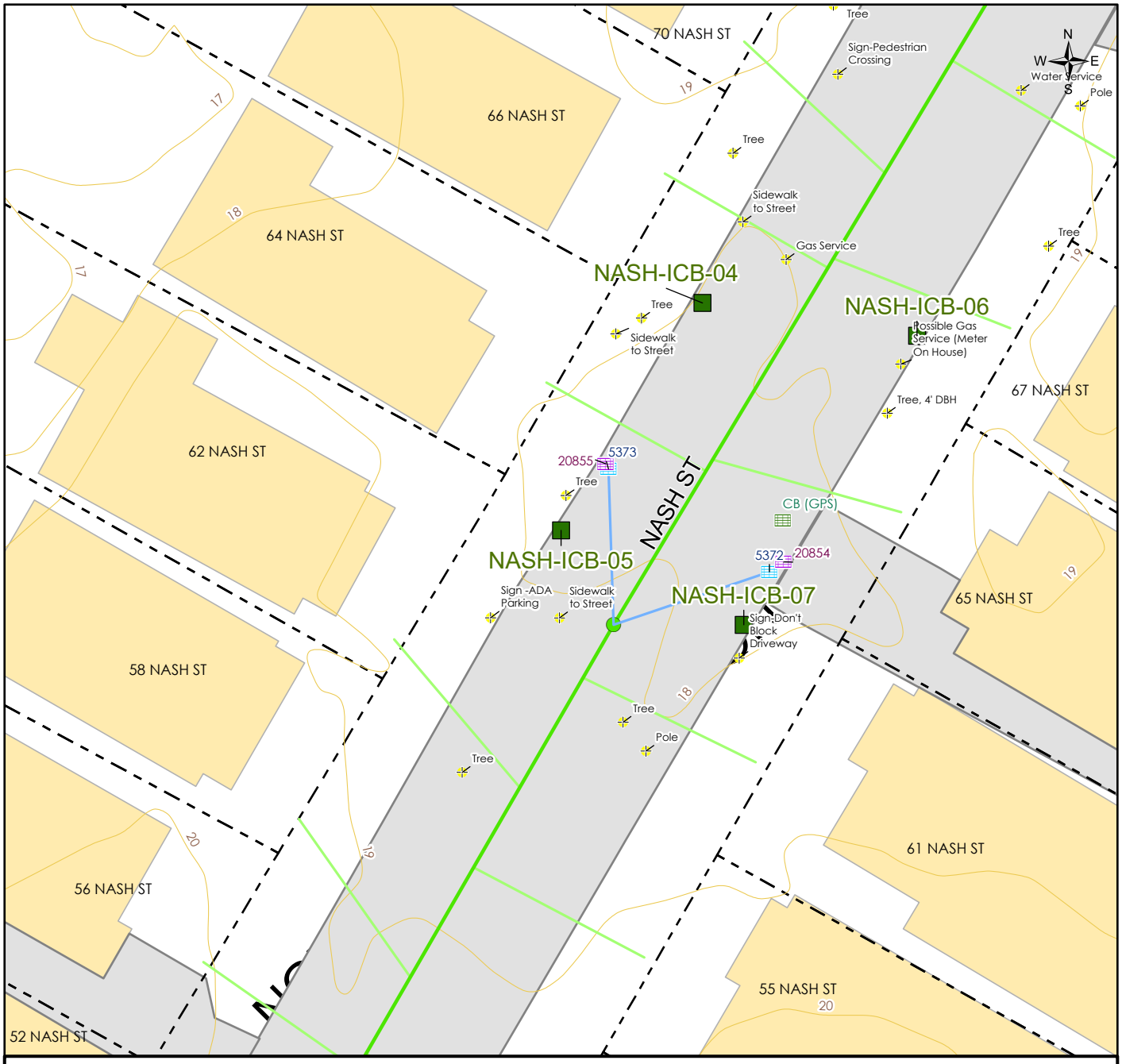

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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0 5 10 20 Feet

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YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
NASH-ICB-04;
NASH-ICB-05;
NASH-ICB-06;
NASH-ICB-07

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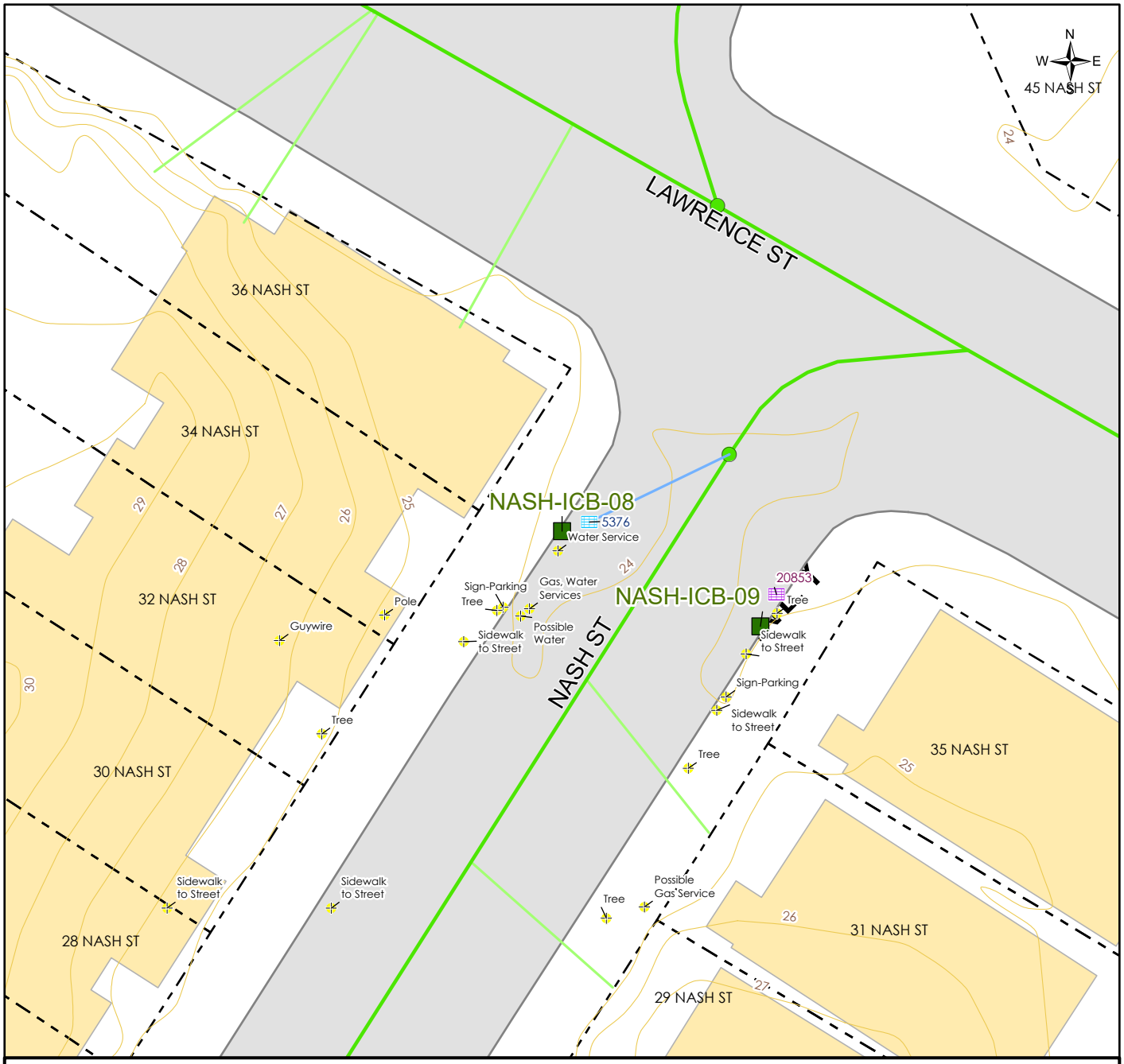

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
NASH-ICB-08;
NASH-ICB-09

OCTOBER 2021

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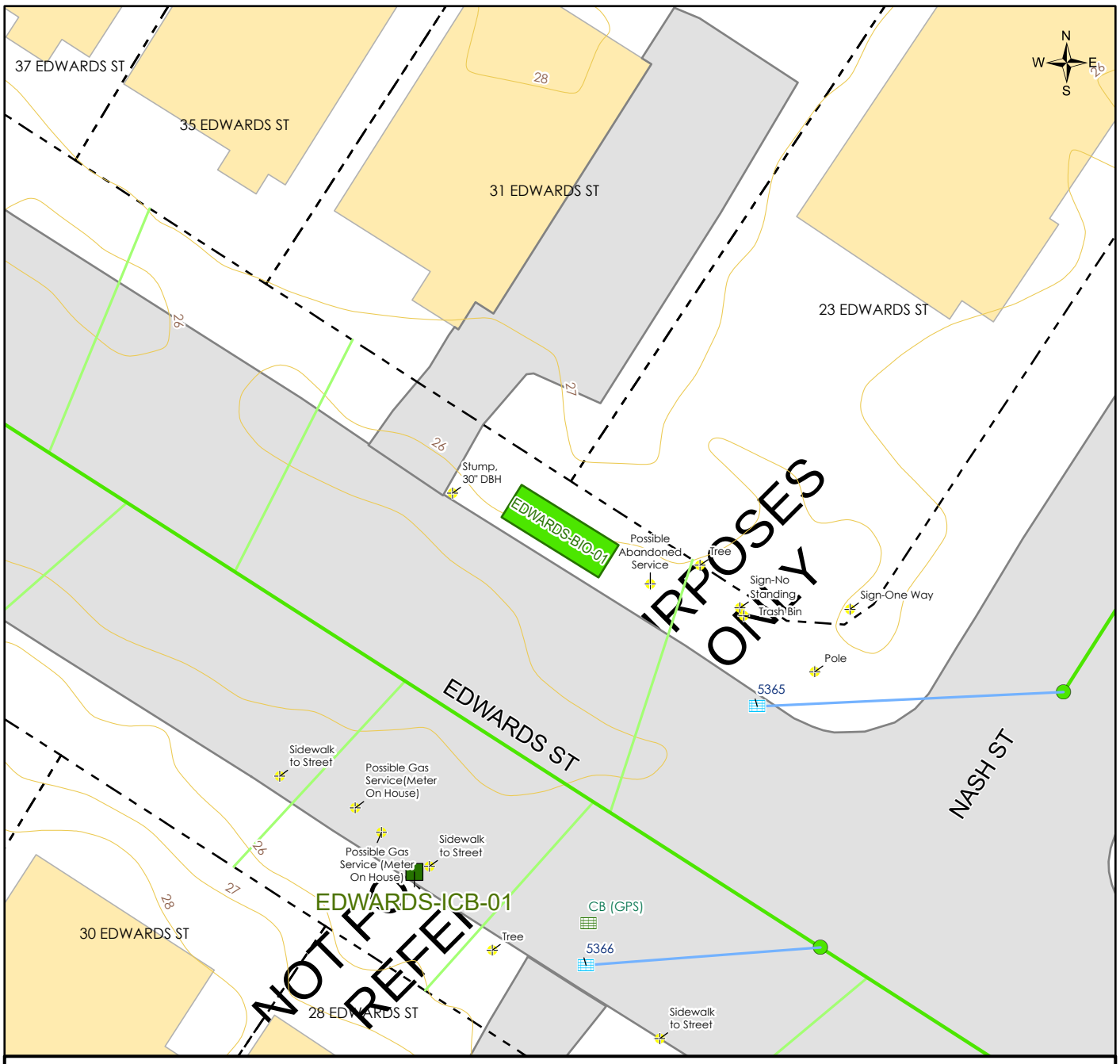

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: 5'5"; SIDEWALK WIDTH: 5'0"
SAWCUT: No; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
EDWARDS-BIO-01

OCTOBER 2021

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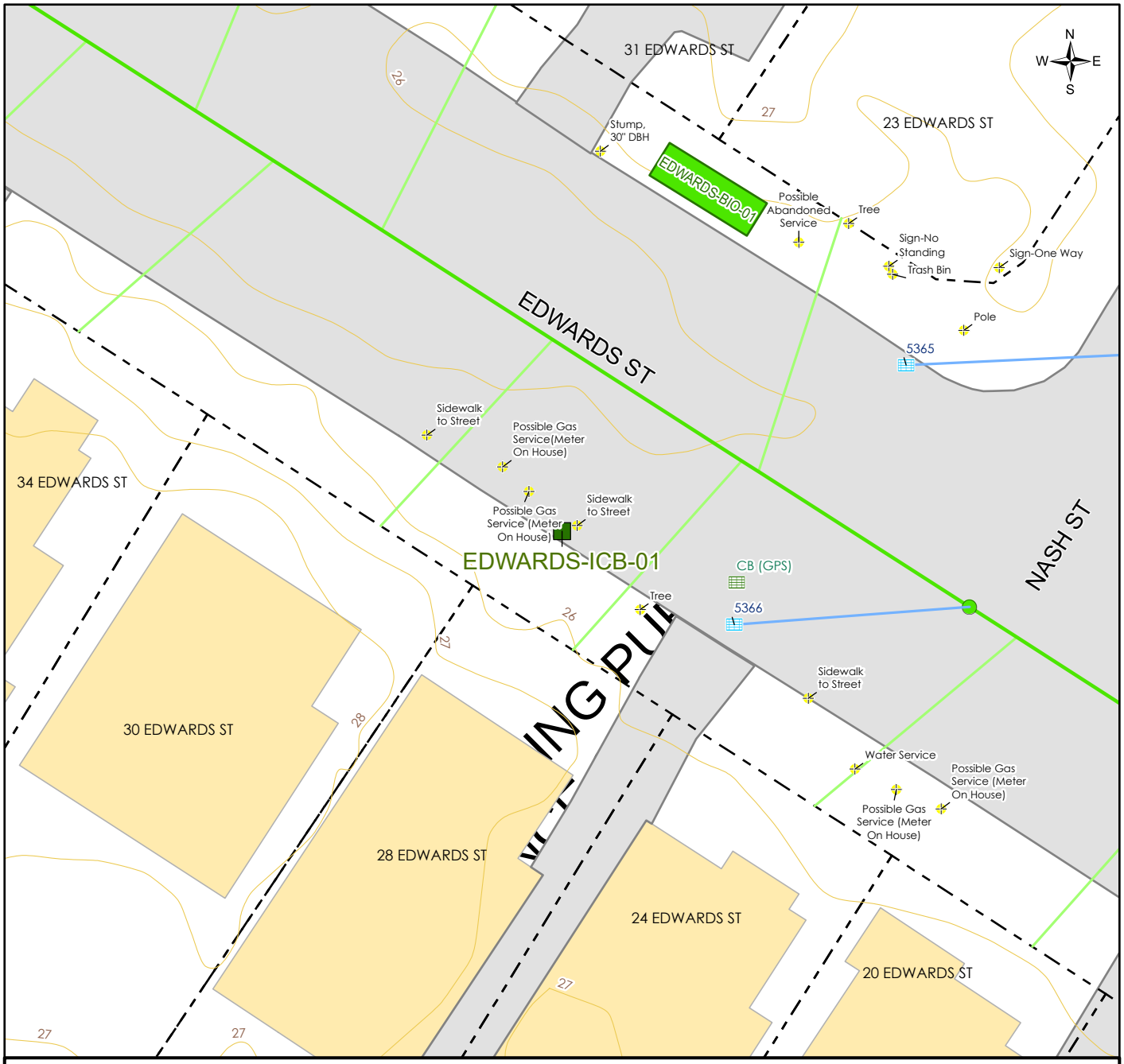

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
EDWARDS-ICB-01

OCTOBER 2021

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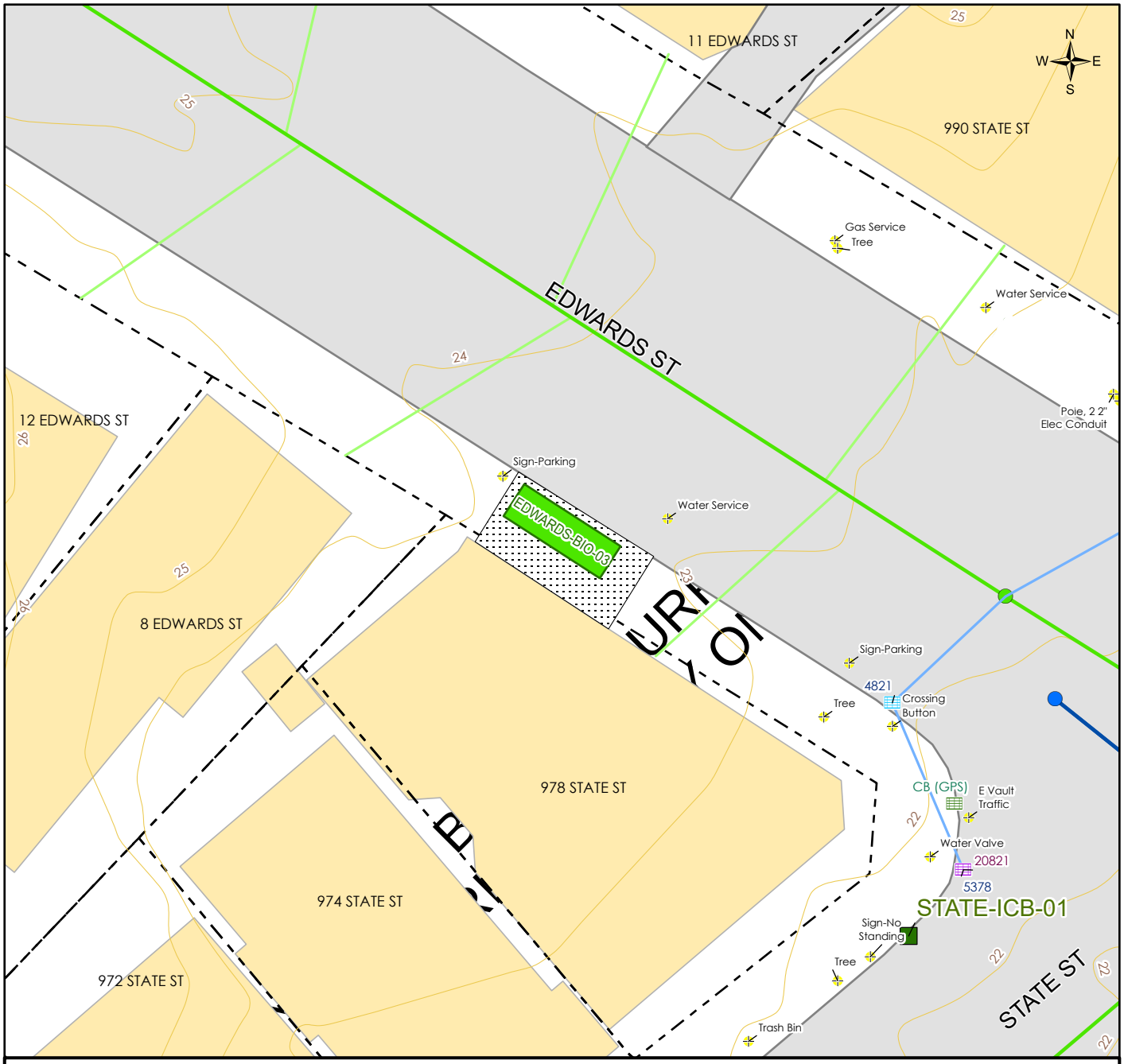

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 11'9"
SAWCUT: Yes; SIDEWALK REPAIR: Yes

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
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- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
EDWARDS-BIO-03

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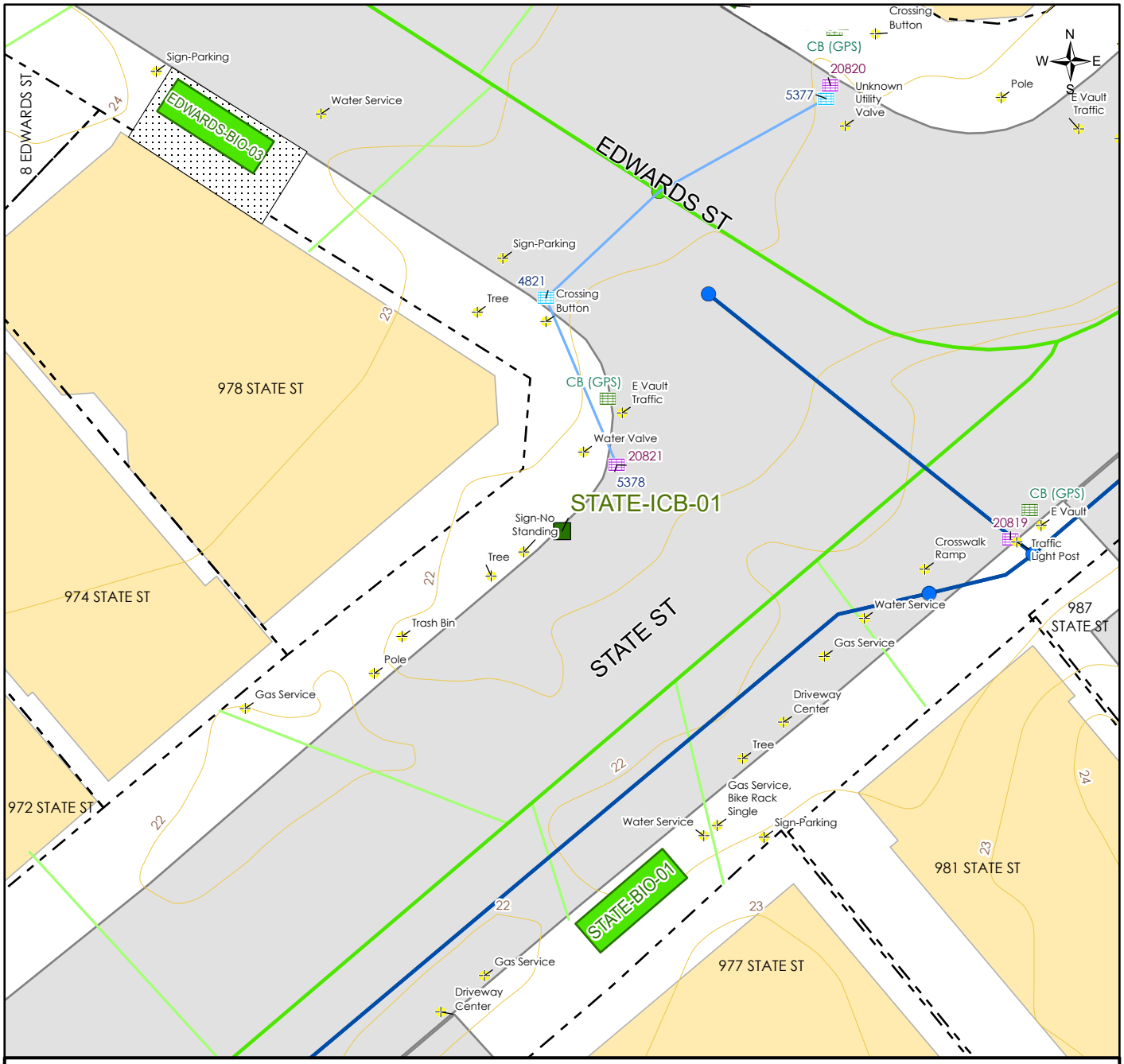

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
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- Sewer Lateral
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- Parcel Boundary
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- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
STATE-ICB-01

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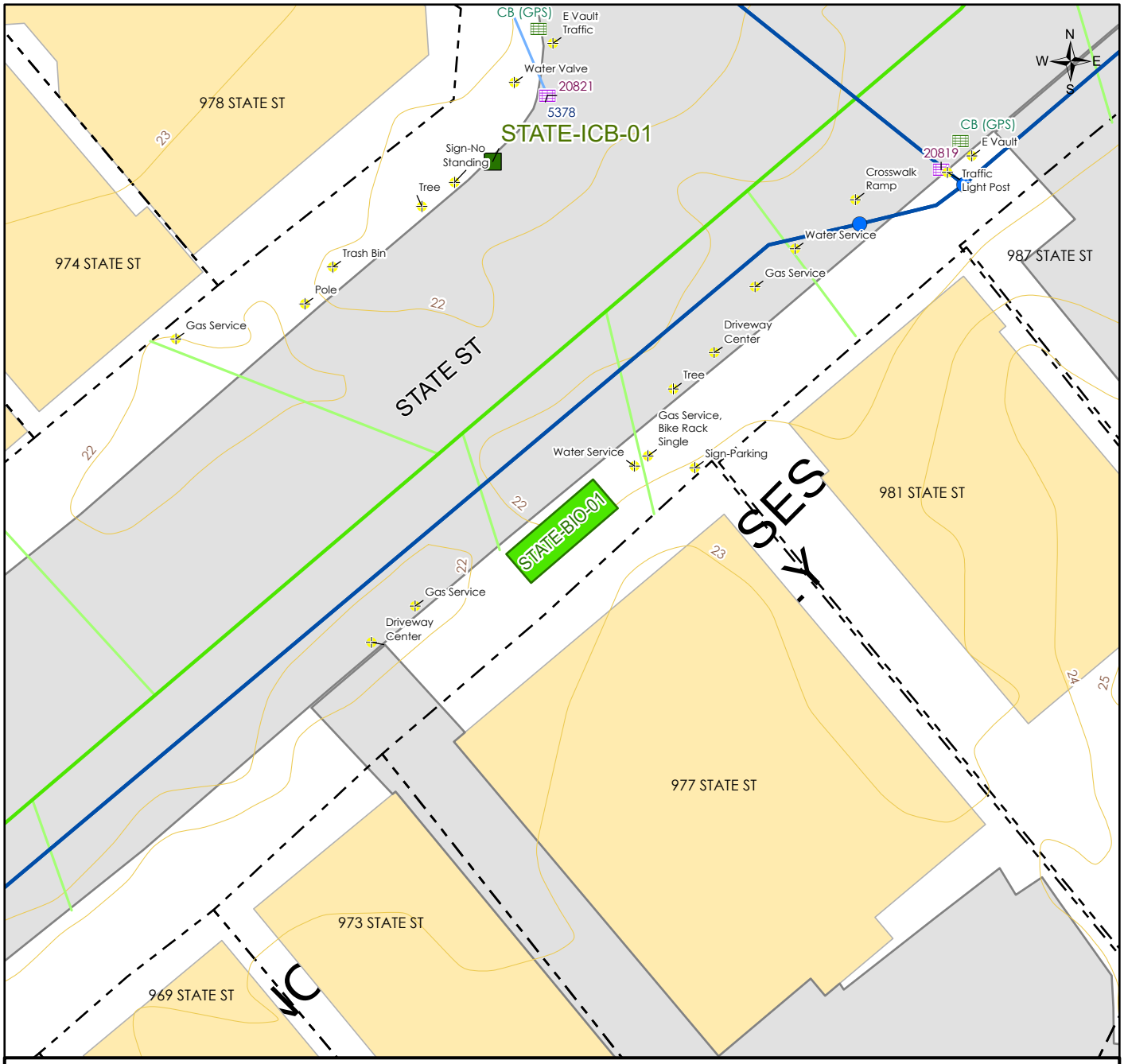

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 12'2"
SAWCUT: Yes; SIDEWALK REPAIR: No ; PAVER REPAIR: Yes

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
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- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
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- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
STATE-BIO-01

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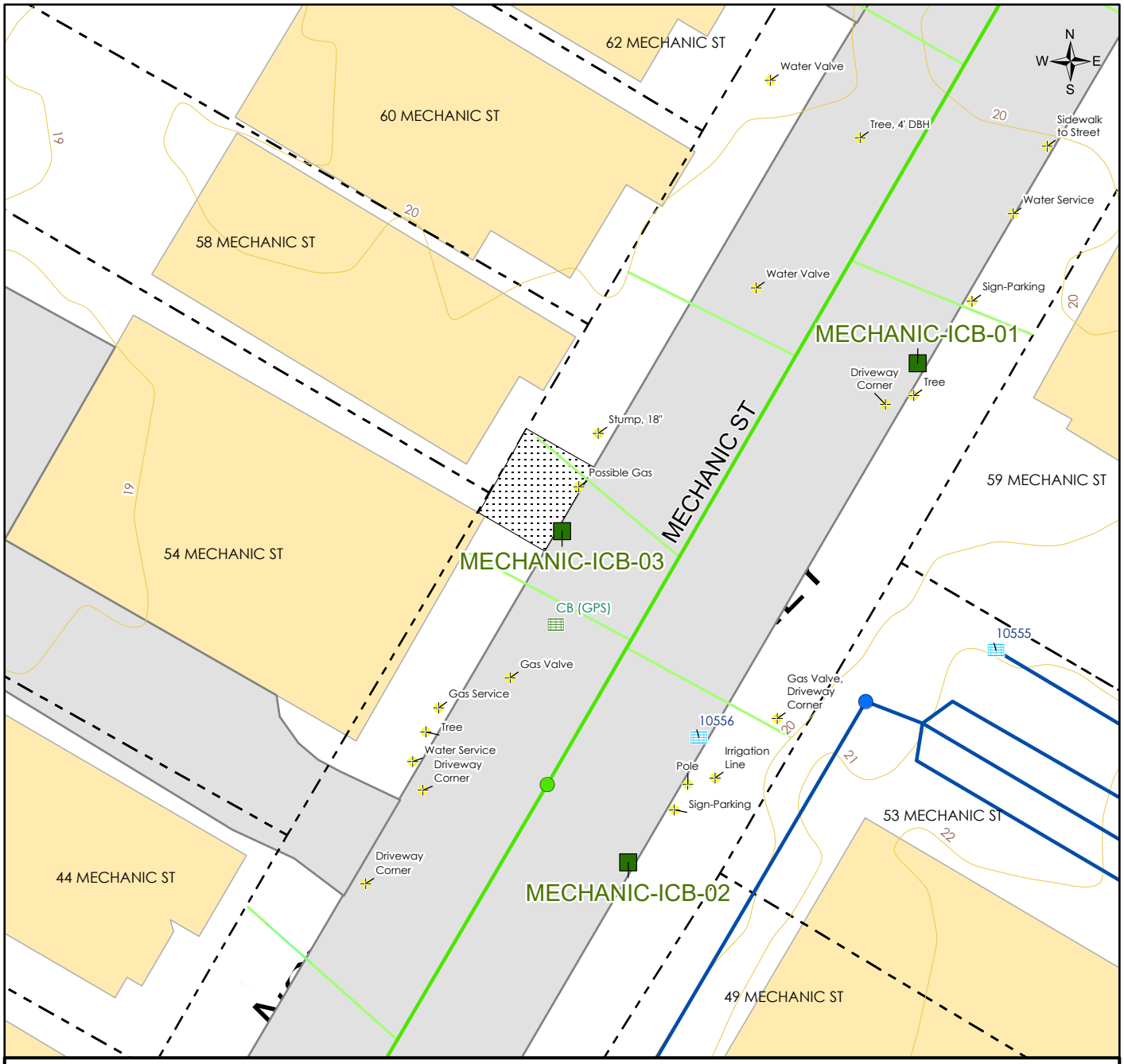

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: Yes

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
MECHANIC-ICB-01;
MECHANIC-ICB-02;
MECHANIC-ICB-03

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CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
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- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
EAST-ICB-01

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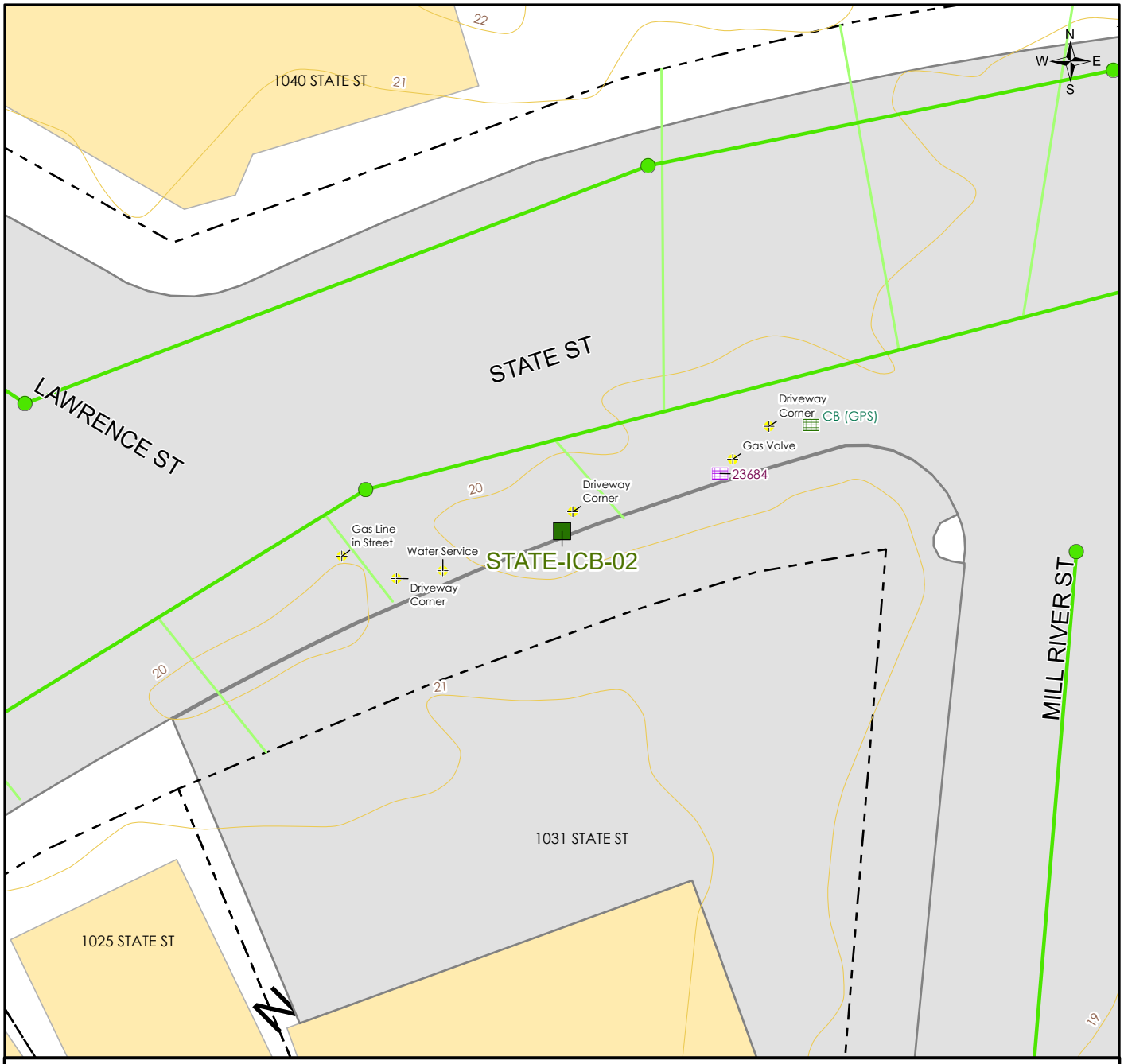

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
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- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
STATE-ICB-02

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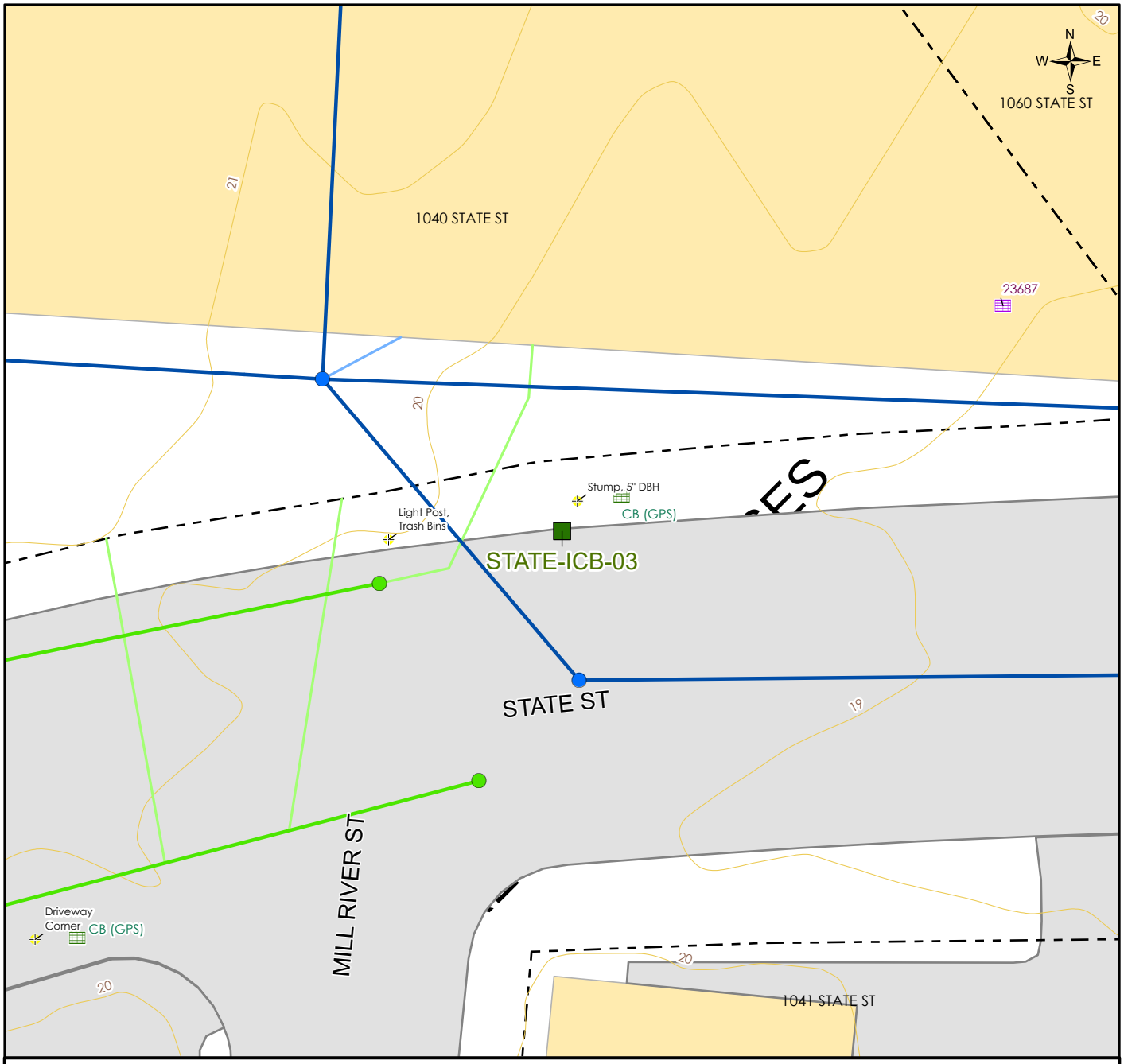

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
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- Sewer Main
- Building
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- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
STATE-ICB-03

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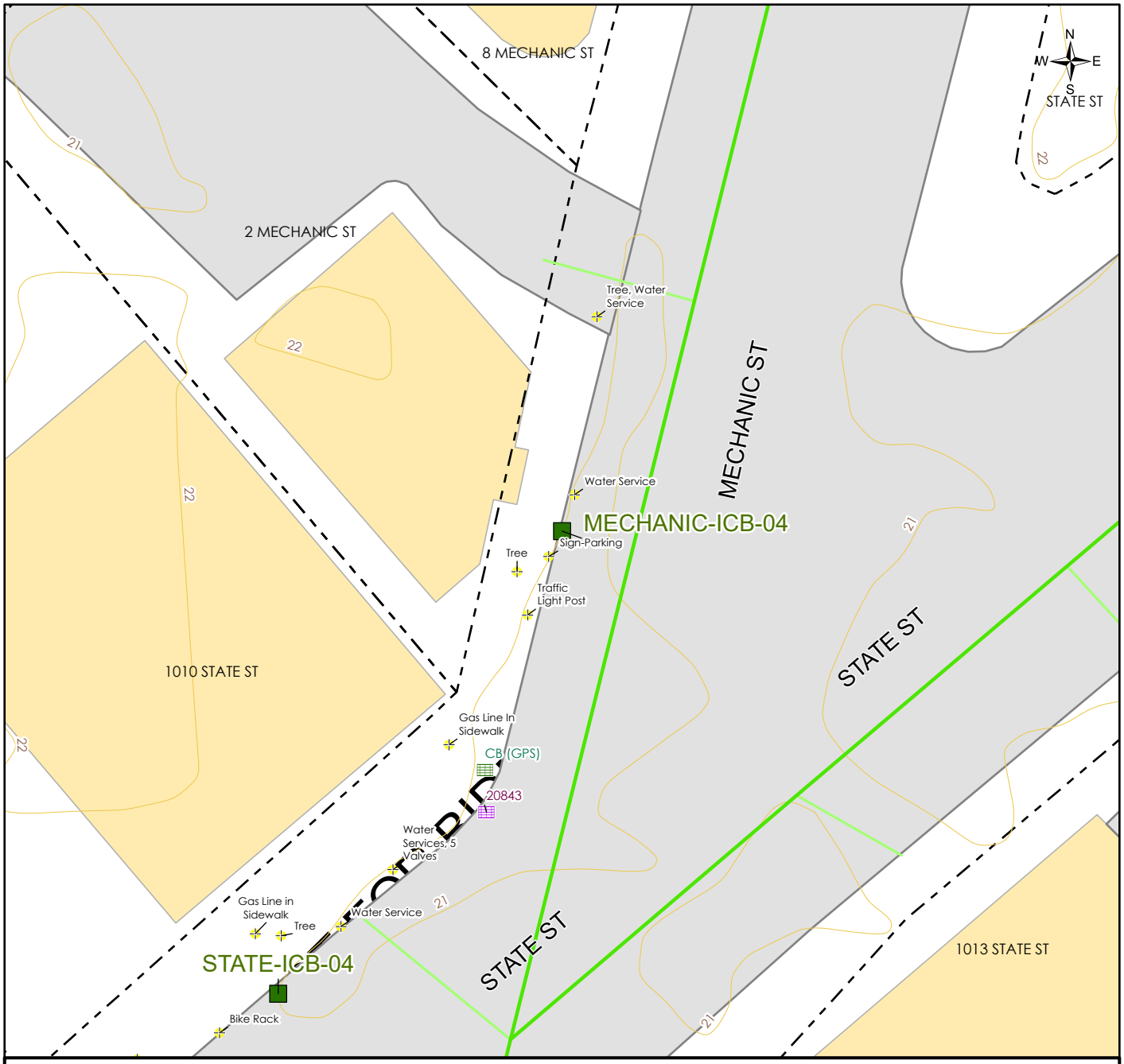

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
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- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
MECHANIC-ICB-04

OCTOBER 2021

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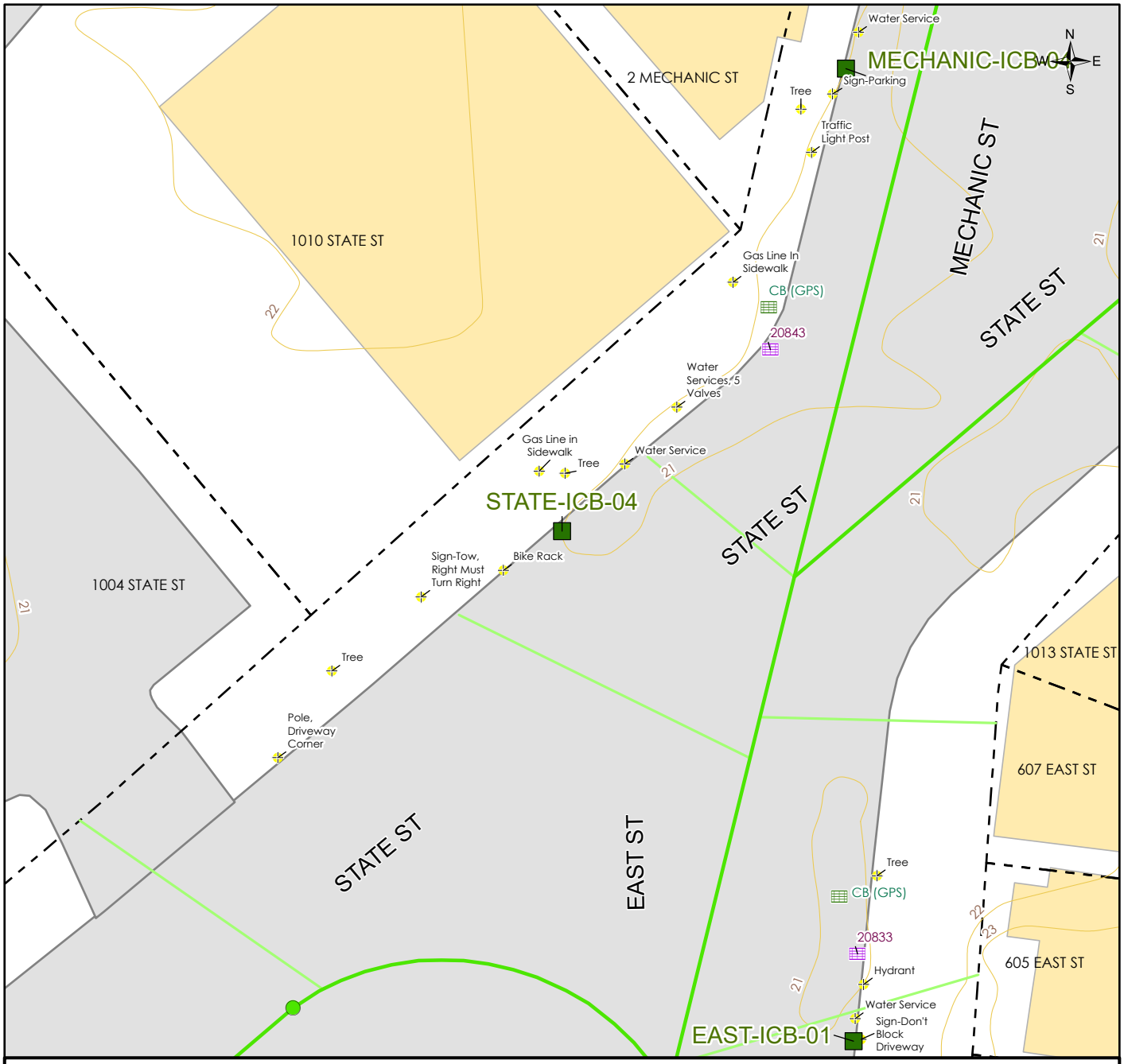

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
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- Storm Outfall
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- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
STATE-ICB-04

OCTOBER 2021

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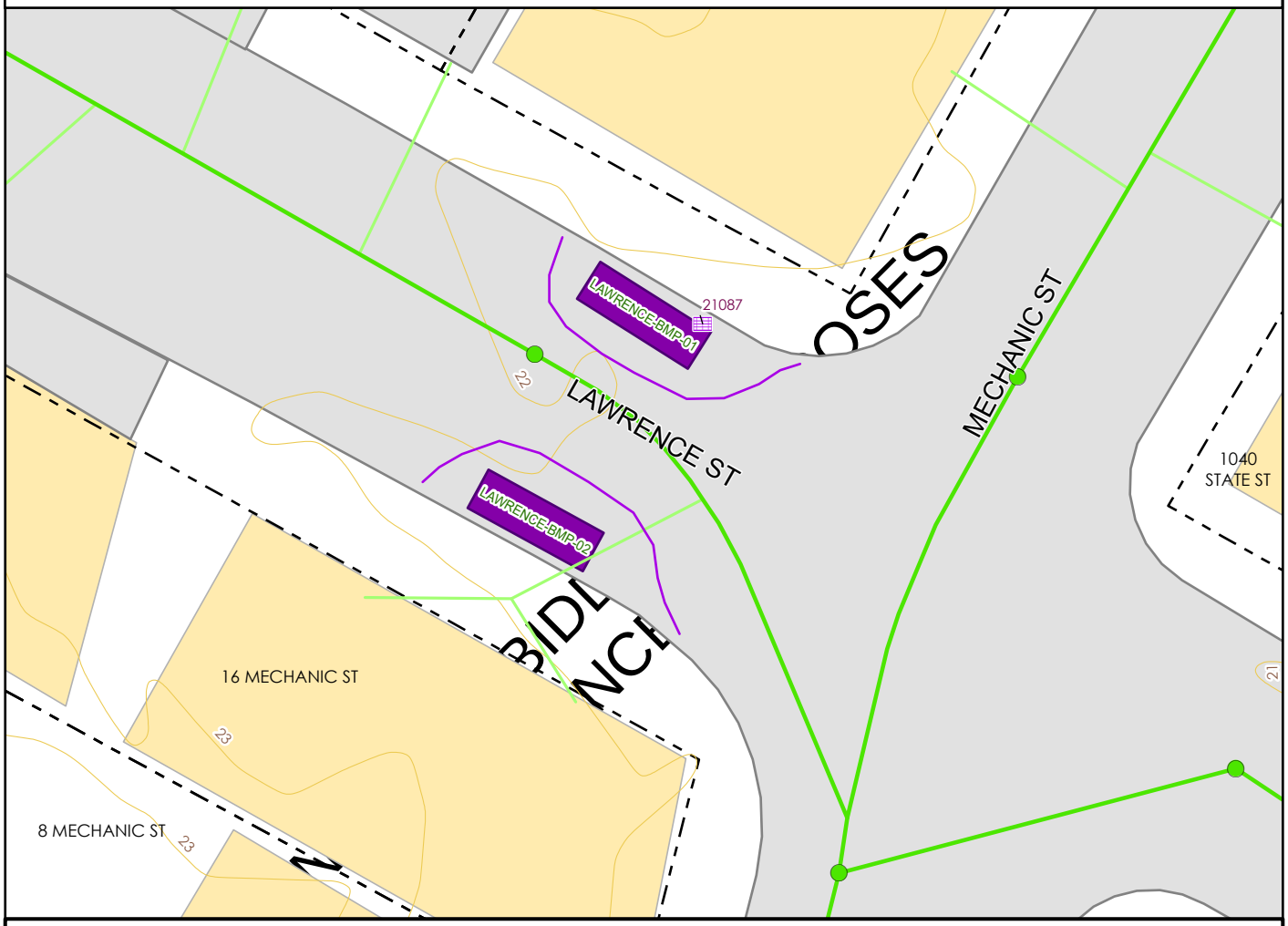
Notes: The installation of the proposed bump out bioswale locations at Lawrence-BMP-01 and Lawrence BMP-02 shall be coordinated with the City of New Haven. The City of New Haven will be responsible for providing the curb sidewalks and bump outs, as well as removing the asphalt and road base and providing backfill with bioswale soil mix.

Greater New Haven Water Pollution Control Authority Contractor procured for this Contract shall convert existing catch basin to an overflow basin adding a pre-cast riser and Inlet Frame, Beehive Grate NEENAH R-2560-G or approved equal. Where there is not a catch basin inside the bump out, an overflow to the catch basin shall be provided similar to Section 2-2 on Drawing D-2 Clinton Avenue, Traffic Calming, City of New Haven Engineering Department, March 2017.

Greater New Haven Water Pollution Control Authority Contractor shall also remove 6-inches of existing soil, and replace with 12-inches of bioswale soil mix and plantings (no gabion required).



CONSTRUCTION NOTES:
CURB COMPOSITION: N/A; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: N/A
SAWCUT: ; SIDEWALK REPAIR: No

Bioswale	Field Collected Data (GPS)	Storm Outfall	Sewer Main
Bump-out	Storm CB	Storm Lateral	Building
Proposed Infiltrating Catch Basin	Storm CB (City)	Storm Main	Parcel Boundary
Sidewalk Repair	Storm CB (GPS)	Sewer MH/Structure	Pavement Edge (approx.)
Curb Bumpout	Drain Manhole	Sewer Lateral	Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
LAWRENCE-BMP-01

OCTOBER 2021

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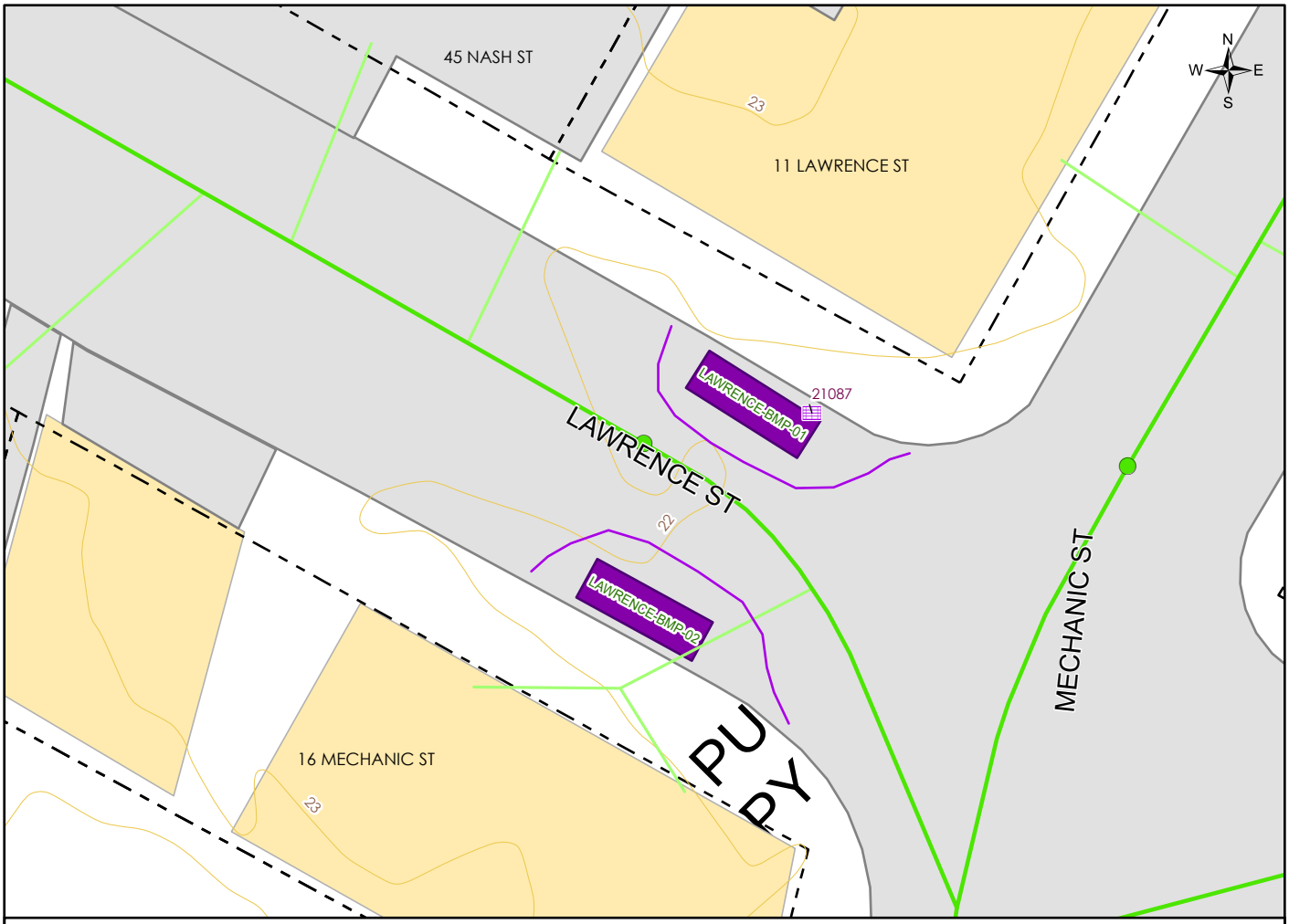

Notes: The installation of the proposed bump out bioswale locations at Lawrence-BMP-01 and Lawrence BMP-02 shall be coordinated with the City of New Haven. The City of New Haven will be responsible for providing the curb sidewalks and bump outs, as well as removing the asphalt and road base and providing backfill with bioswale soil mix.

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Greater New Haven Water Pollution Control Authority Contractor shall also remove 6-inches of existing soil, and replace with 12-inches of bioswale soil mix and plantings (no gabion required).

CONSTRUCTION NOTES:
CURB COMPOSITION: N/A; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: N/A
SAWCUT: ; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
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- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
LAWRENCE-BMP-02
OCTOBER 2021

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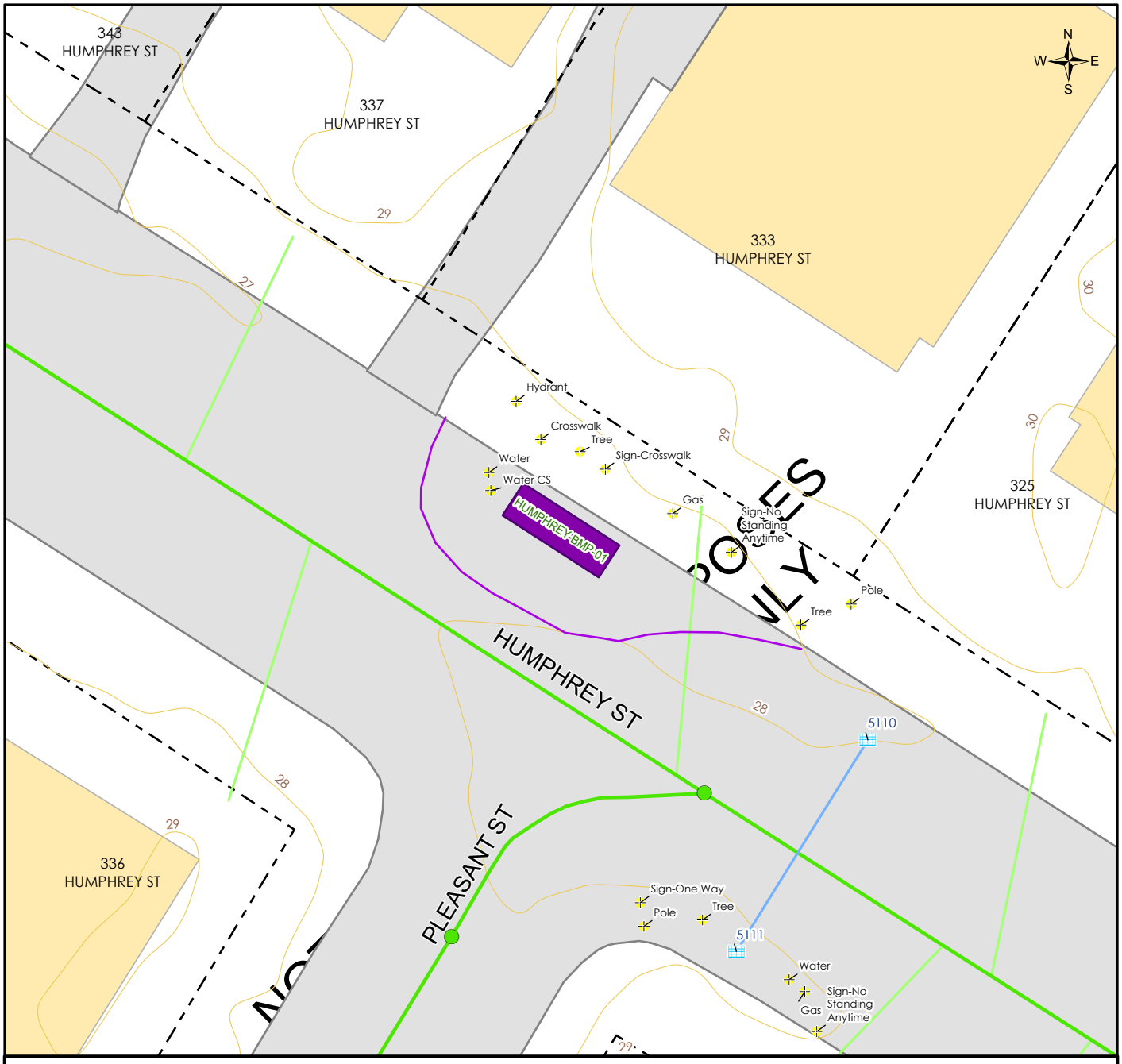

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 11'9"
SAWCUT: No; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
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- Building
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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
HUMPHREY-BMP-01
OCTOBER 2021

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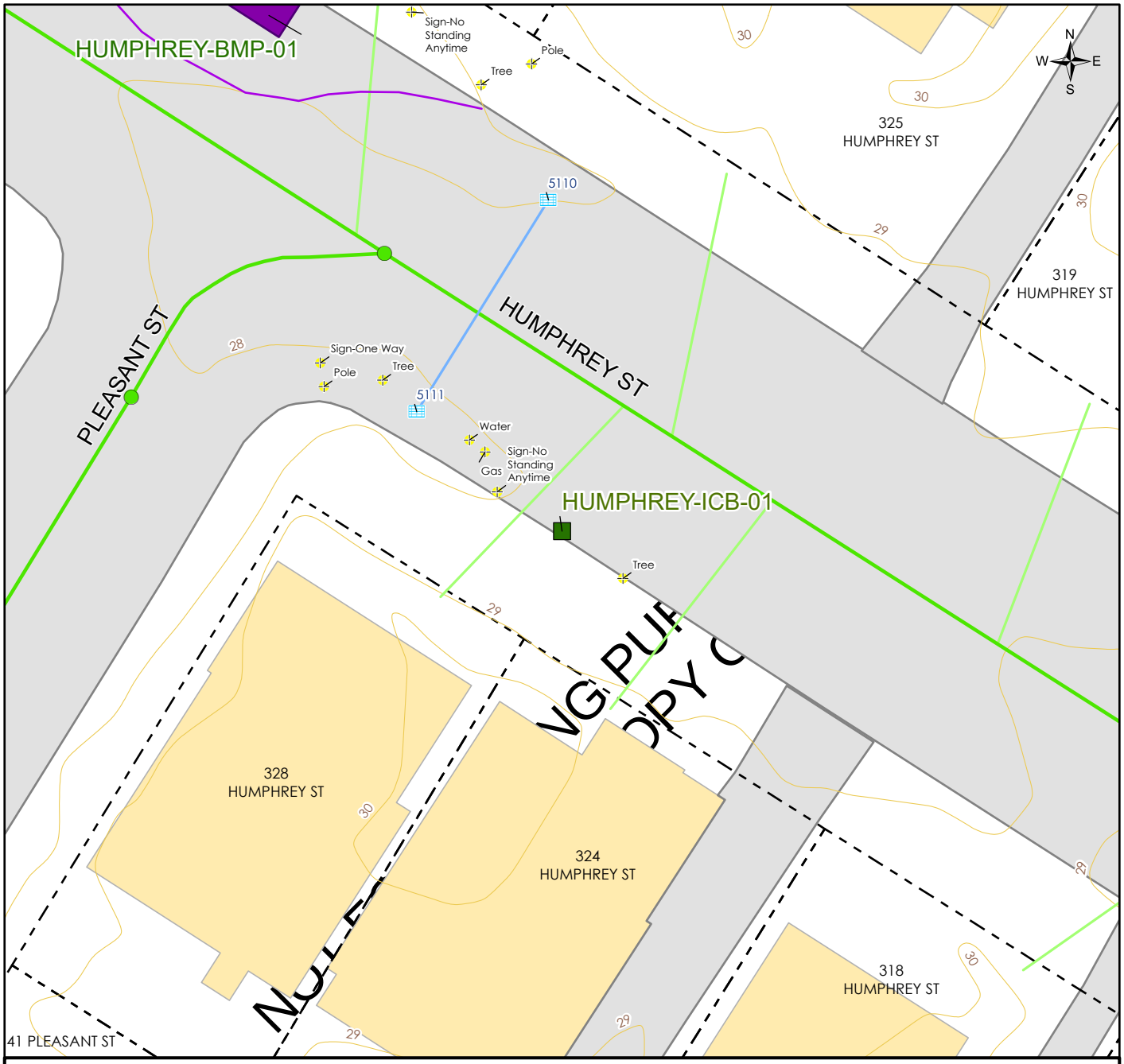

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
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YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
HUMPHREY-ICB-01
OCTOBER 2021

Path: K:\P2014\0391\B10\GNH Mapping\APRX\Desktop UPDATED GNH Proposed Bioswales Mapping 20210427.aprx

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; TREE BELT WIDTH: 4'2"; SIDEWALK WIDTH: 7'7"
SAWCUT: Yes; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
HUMPHREY-BIO-02

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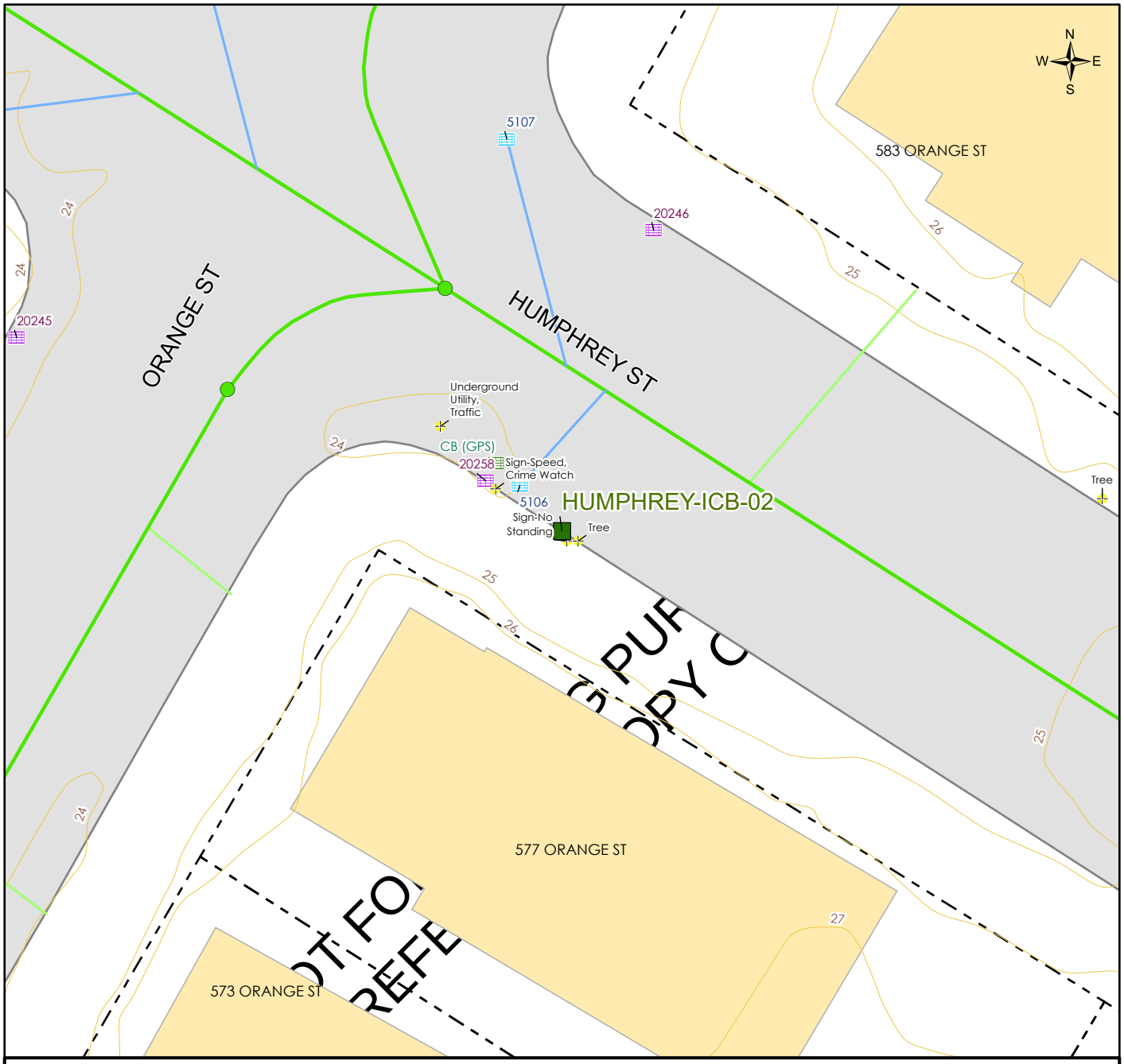

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
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- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
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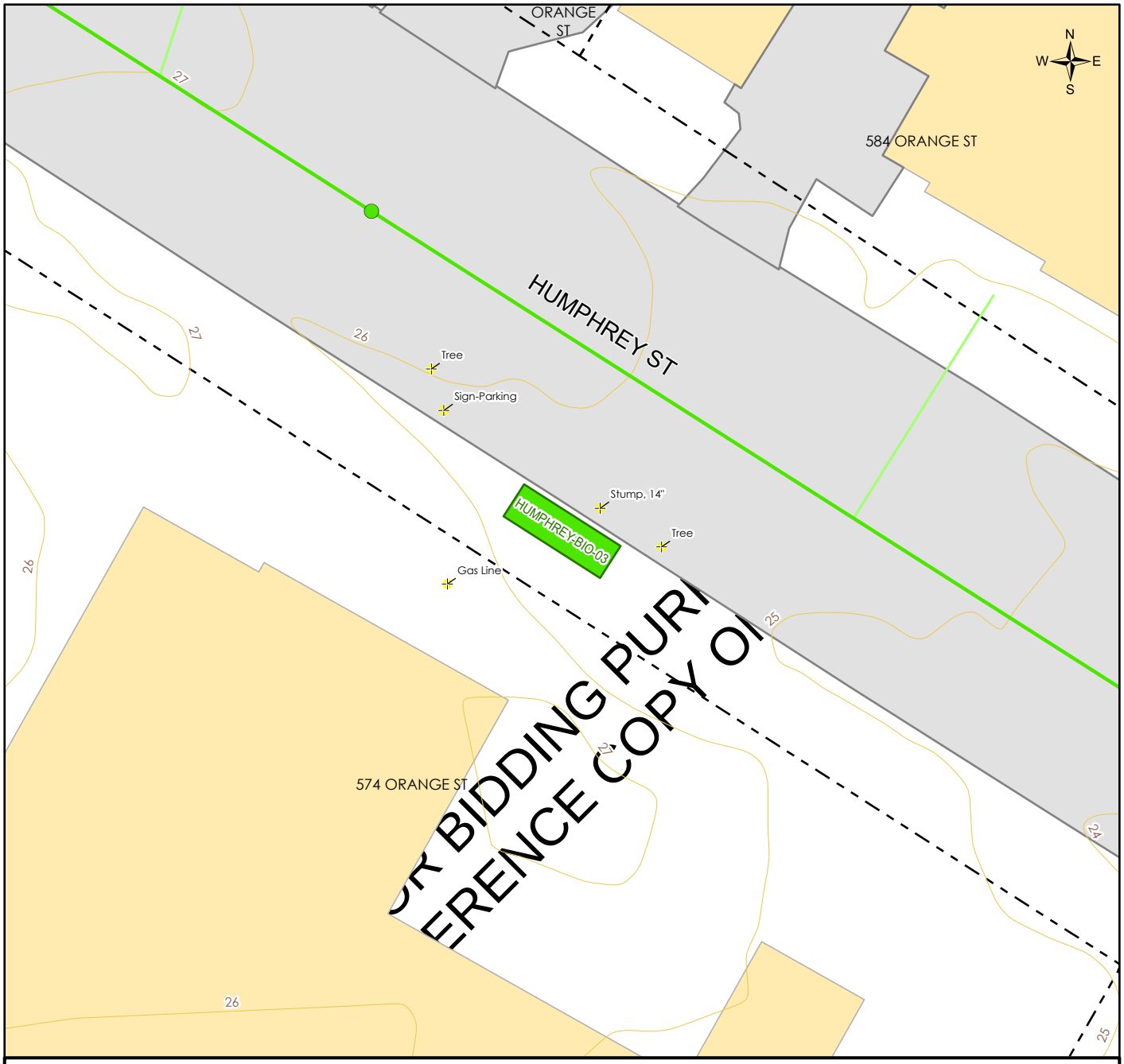

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; TREE BELT WIDTH: 4'0"; SIDEWALK WIDTH: 6'0"
SAWCUT: Yes; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
HUMPHREY-BIO-03
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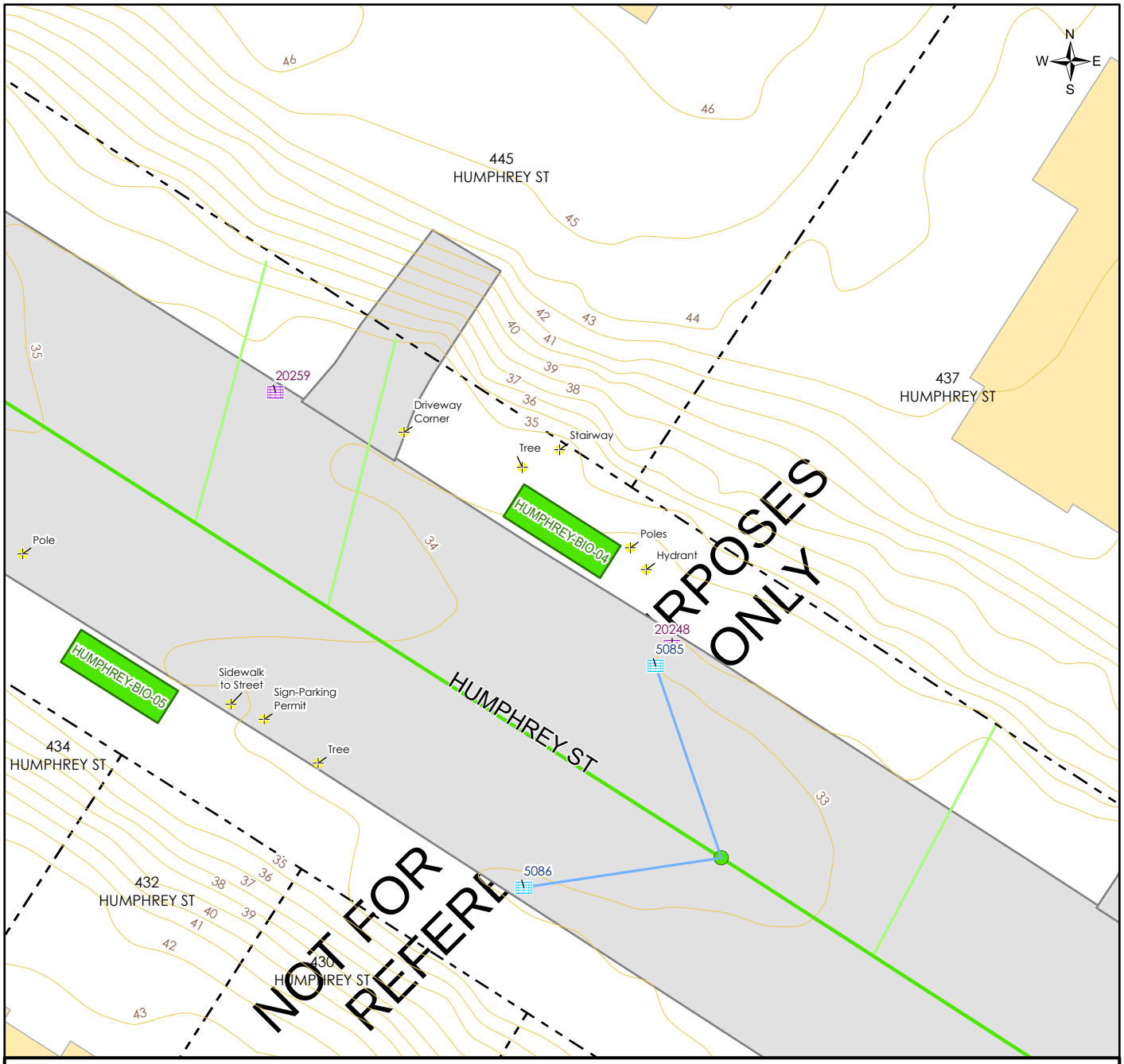

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; TREE BELT WIDTH: 6'8"; SIDEWALK WIDTH: 5'0"
SAWCUT: No; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
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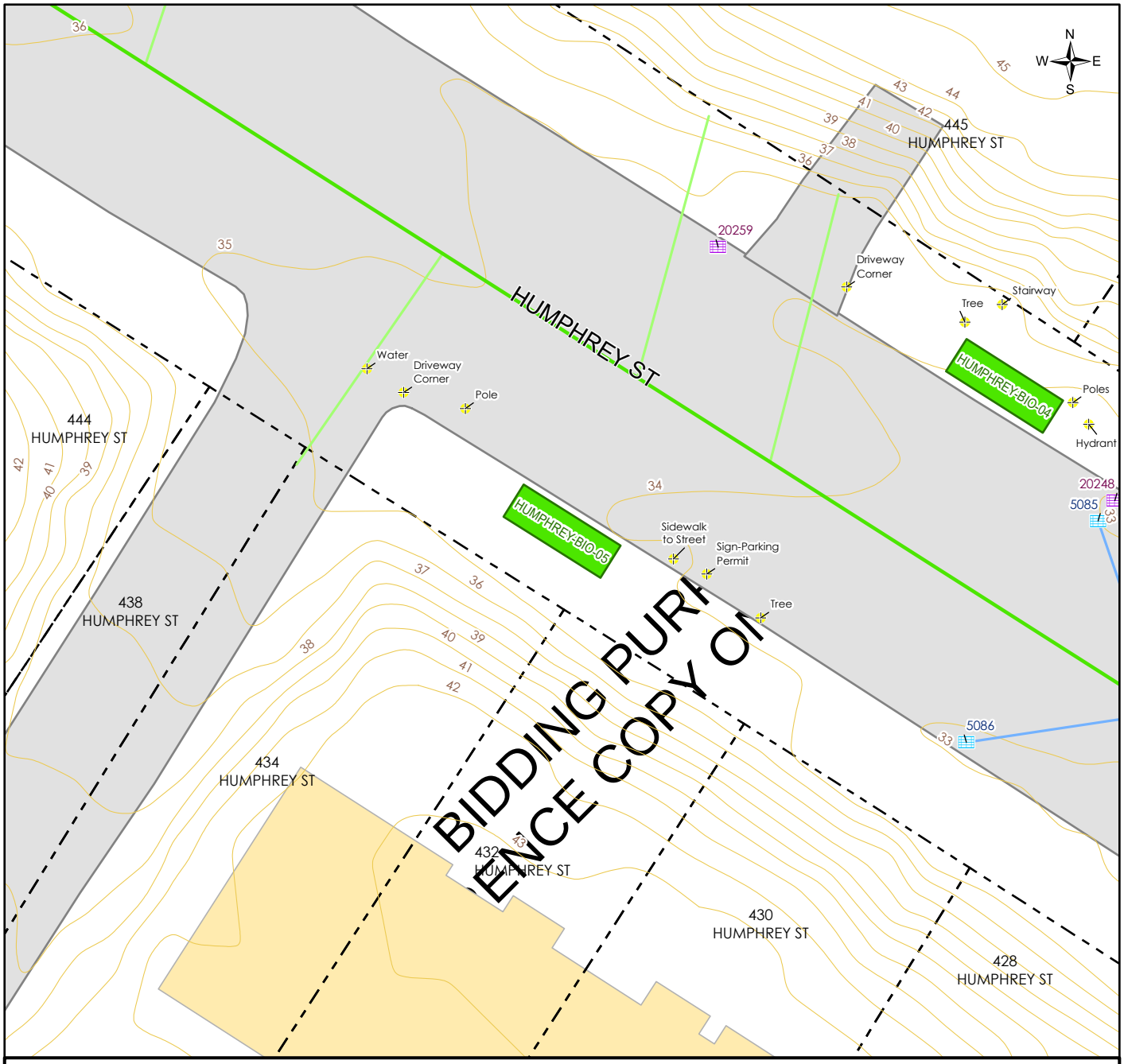

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; TREE BELT WIDTH: 5'8"; SIDEWALK WIDTH: 7'0"
SAWCUT: No; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
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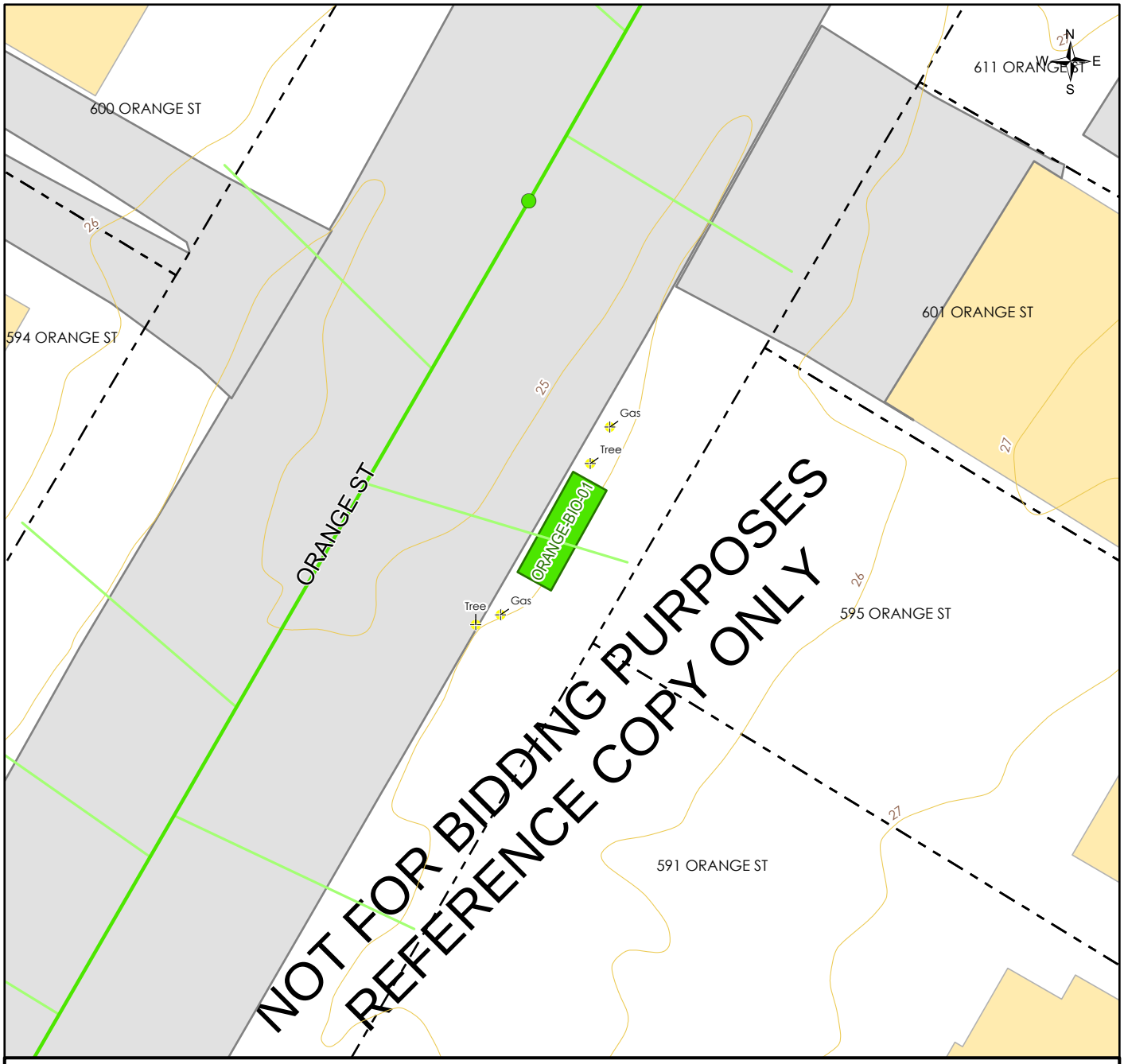

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; TREE BELT WIDTH: 5'16"; SIDEWALK WIDTH: N/A
SAWCUT: Yes; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
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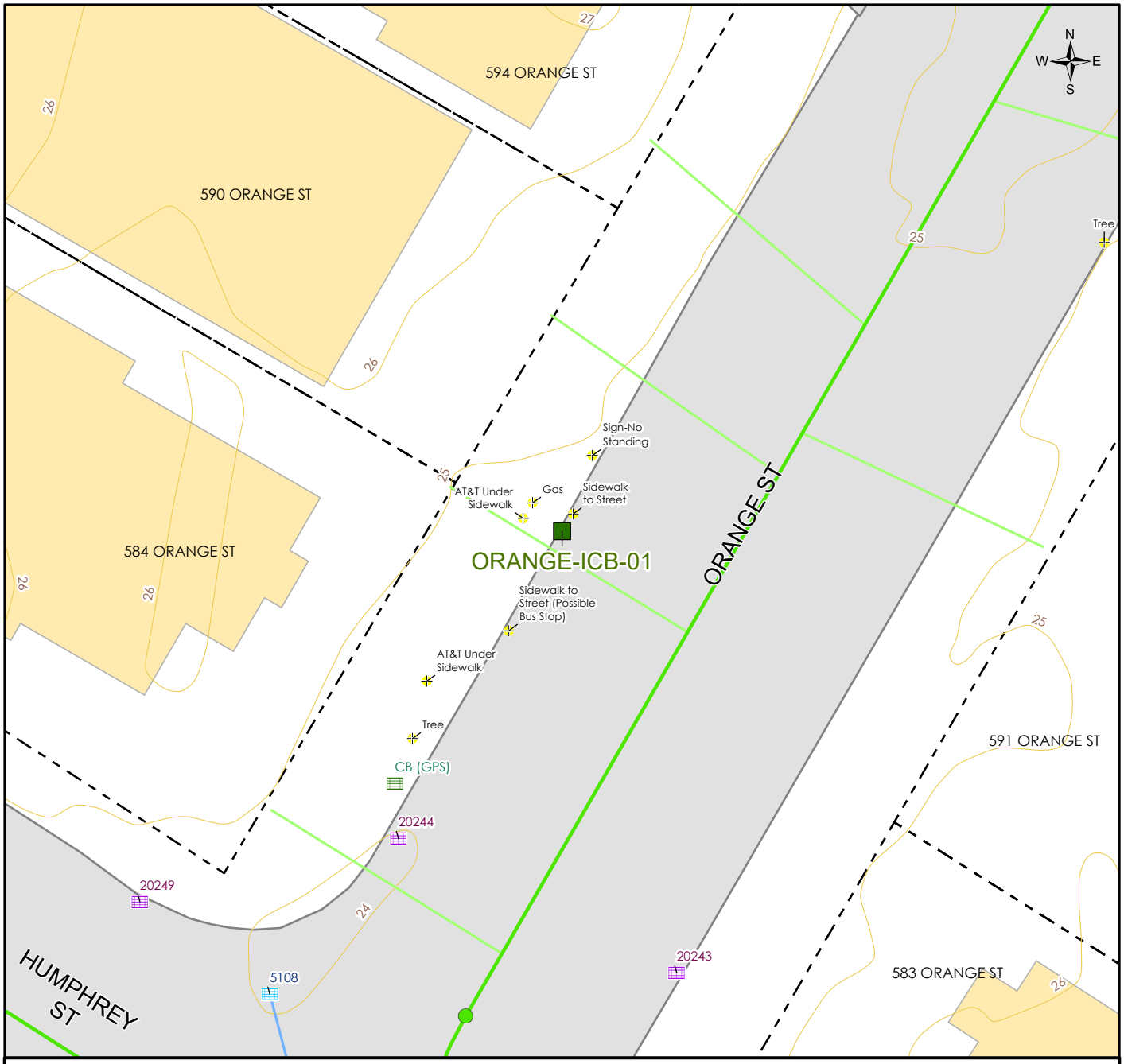

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
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- Sewer Lateral
- Sewer Main
- Building
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- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
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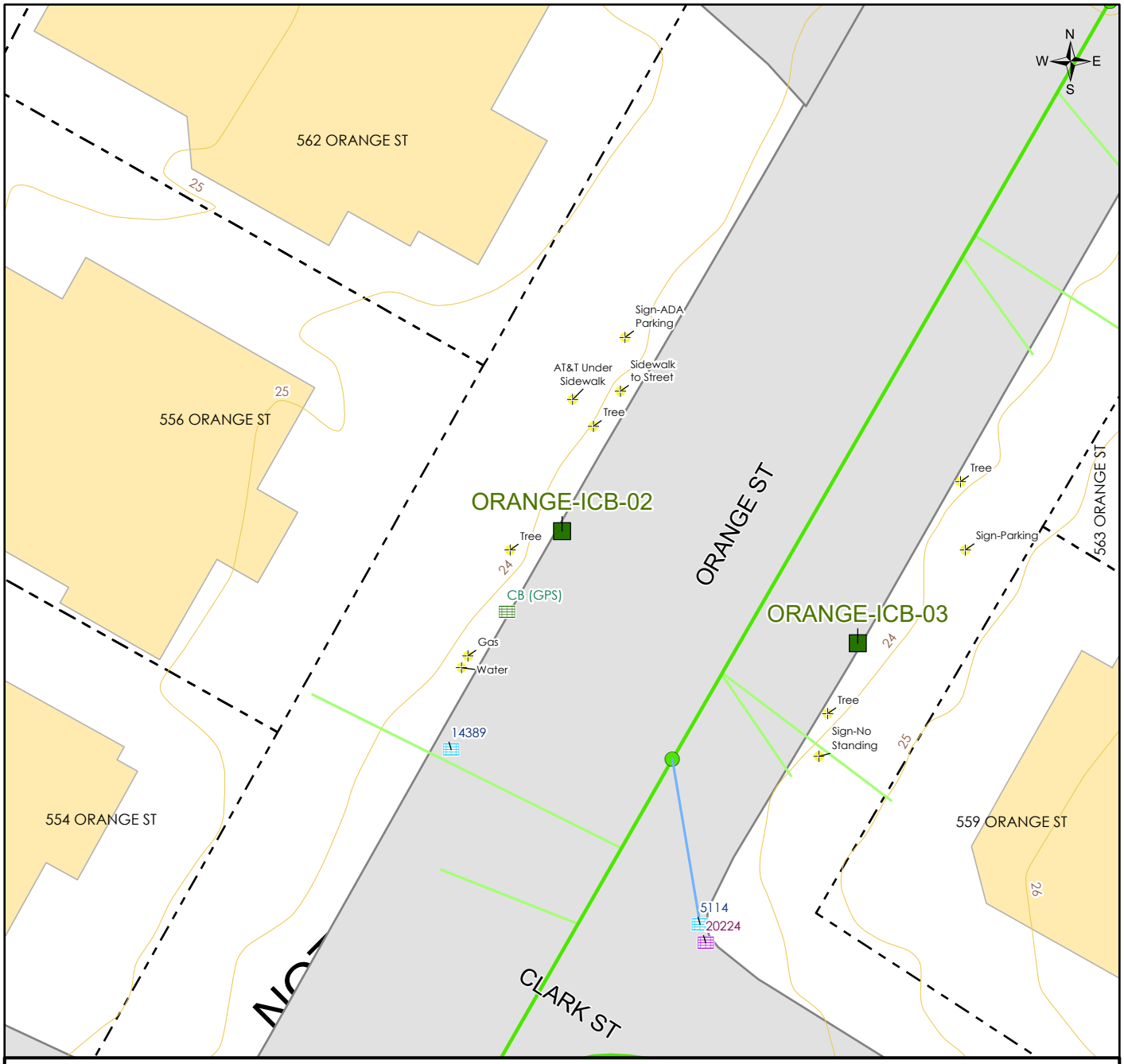

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
ORANGE-ICB-02;
ORANGE-ICB-03

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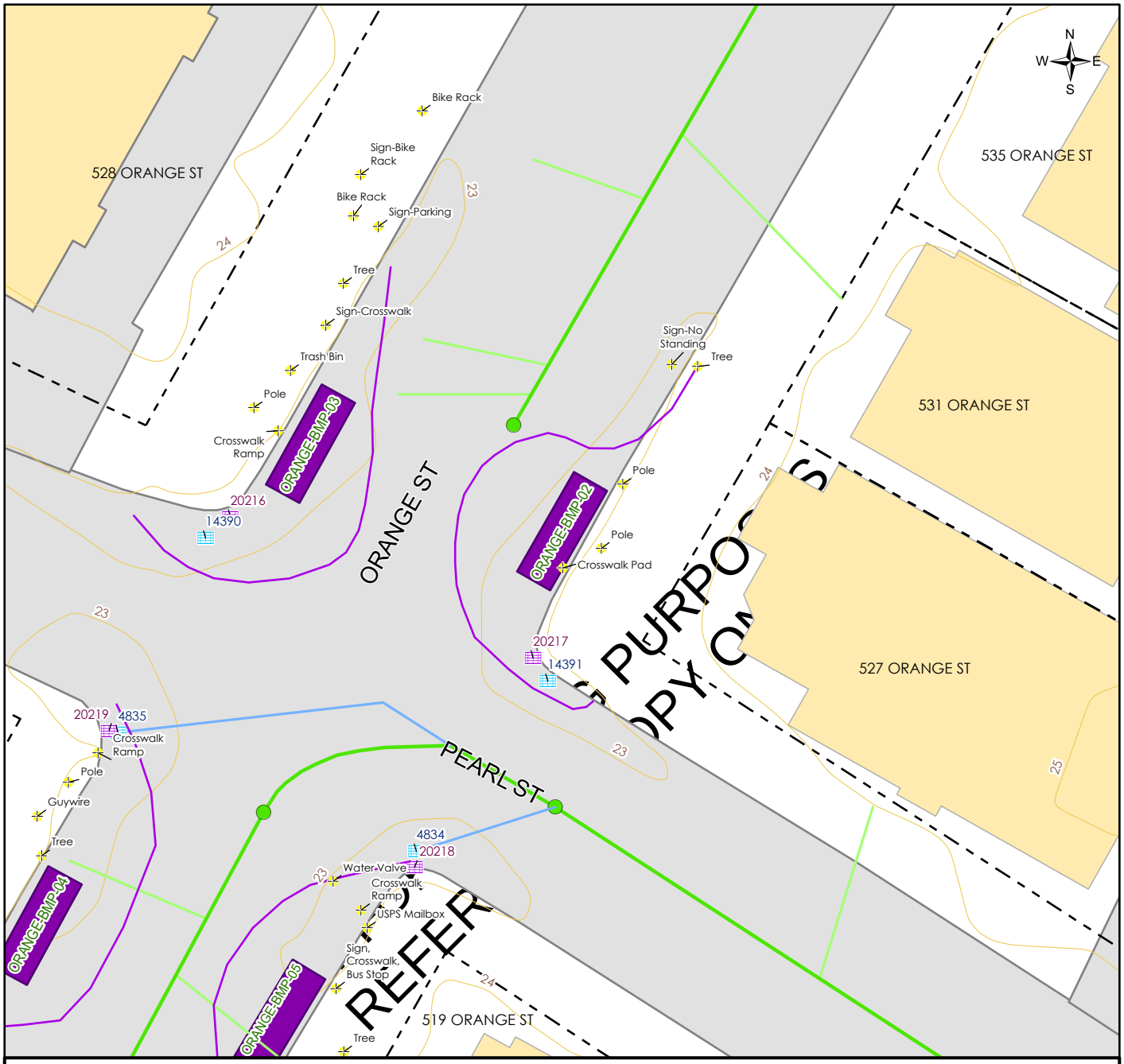

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 12'8"
SAWCUT: No; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
ORANGE-BMP-02

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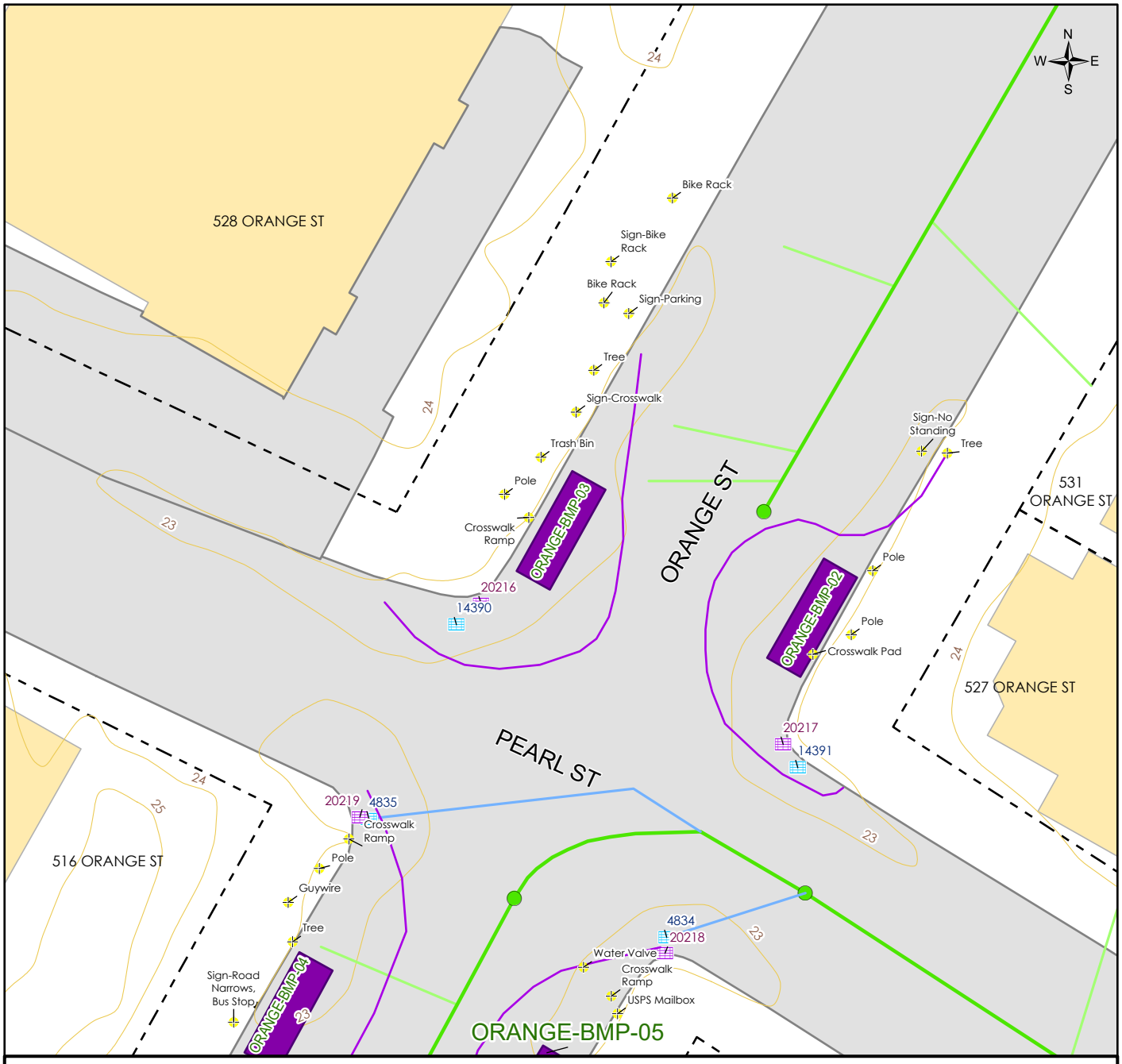

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 14'9"
SAWCUT: No; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
ORANGE-BMP-03

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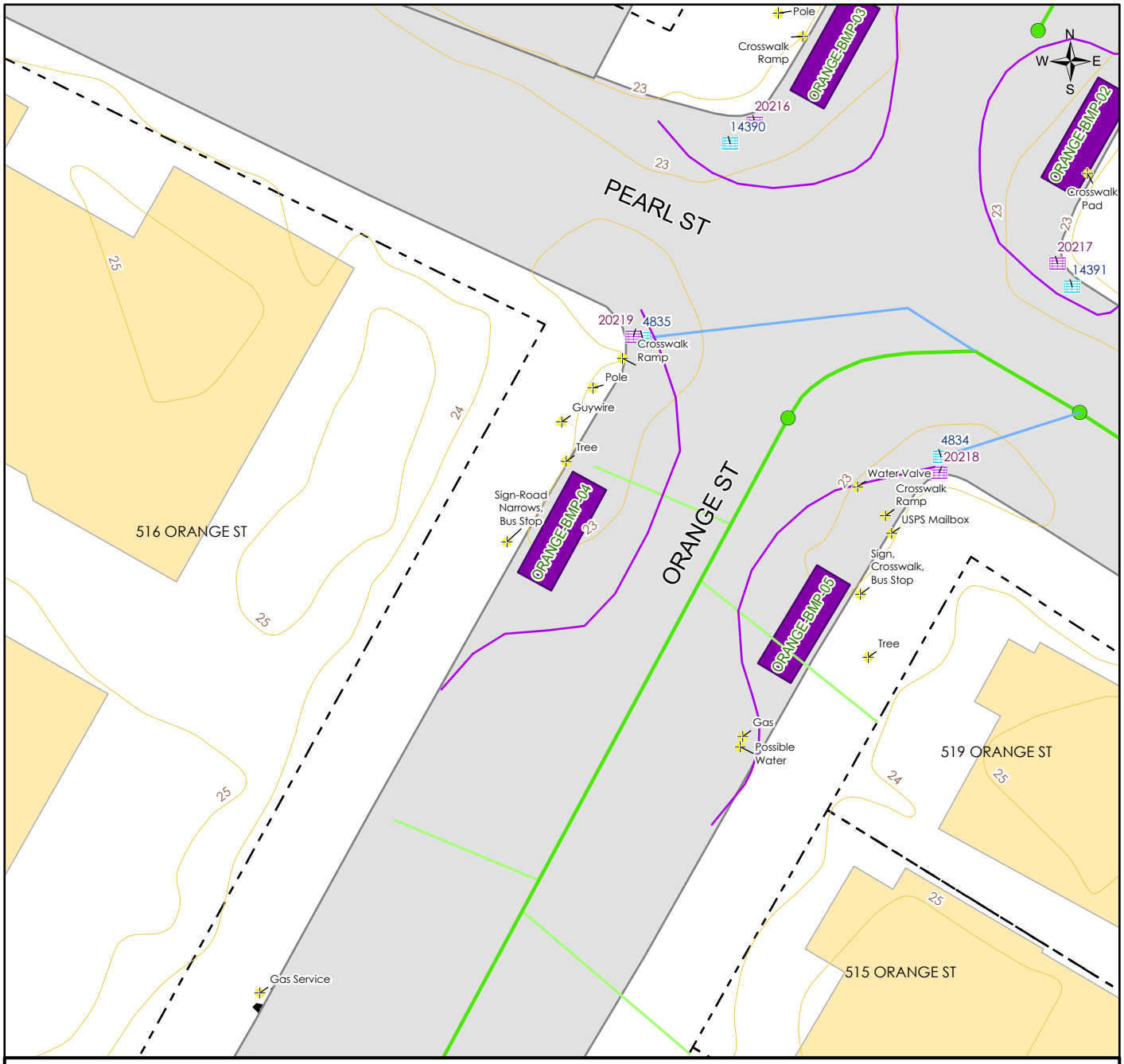

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 14'11"
SAWCUT: No; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
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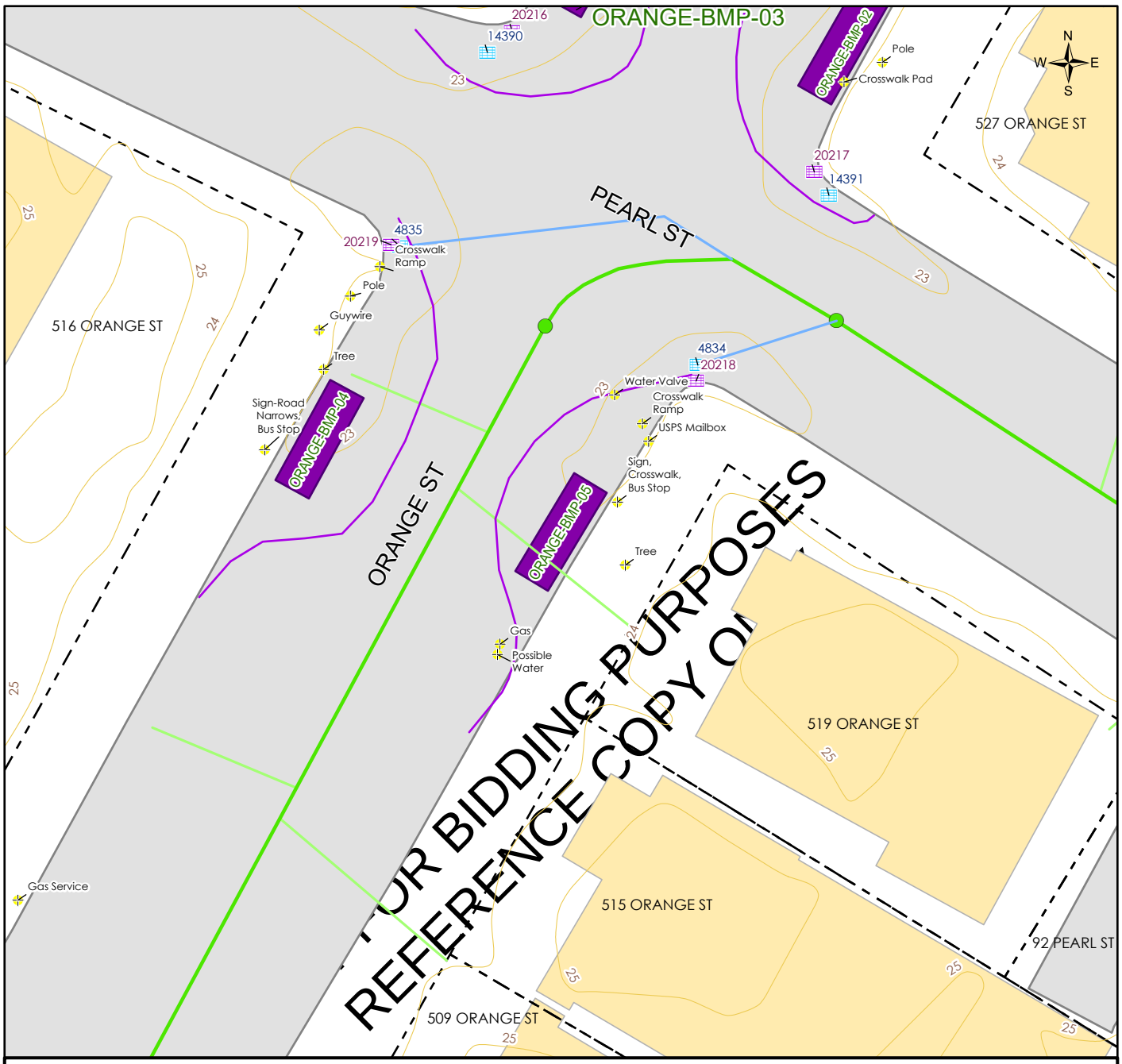

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 7'2"
SAWCUT: No; SIDEWALK REPAIR: No

Bioswale	Field Collected Data (GPS)	Storm Outfall	Sewer Main
Bump-out	Storm CB	Storm Lateral	Building
Proposed Infiltrating Catch Basin	Storm CB (City)	Storm Main	Parcel Boundary
Sidewalk Repair	Storm CB (GPS)	Sewer MH/Structure	Pavement Edge (approx.)
Curb Bumpout	Drain Manhole	Sewer Lateral	Elevation (ft)

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PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
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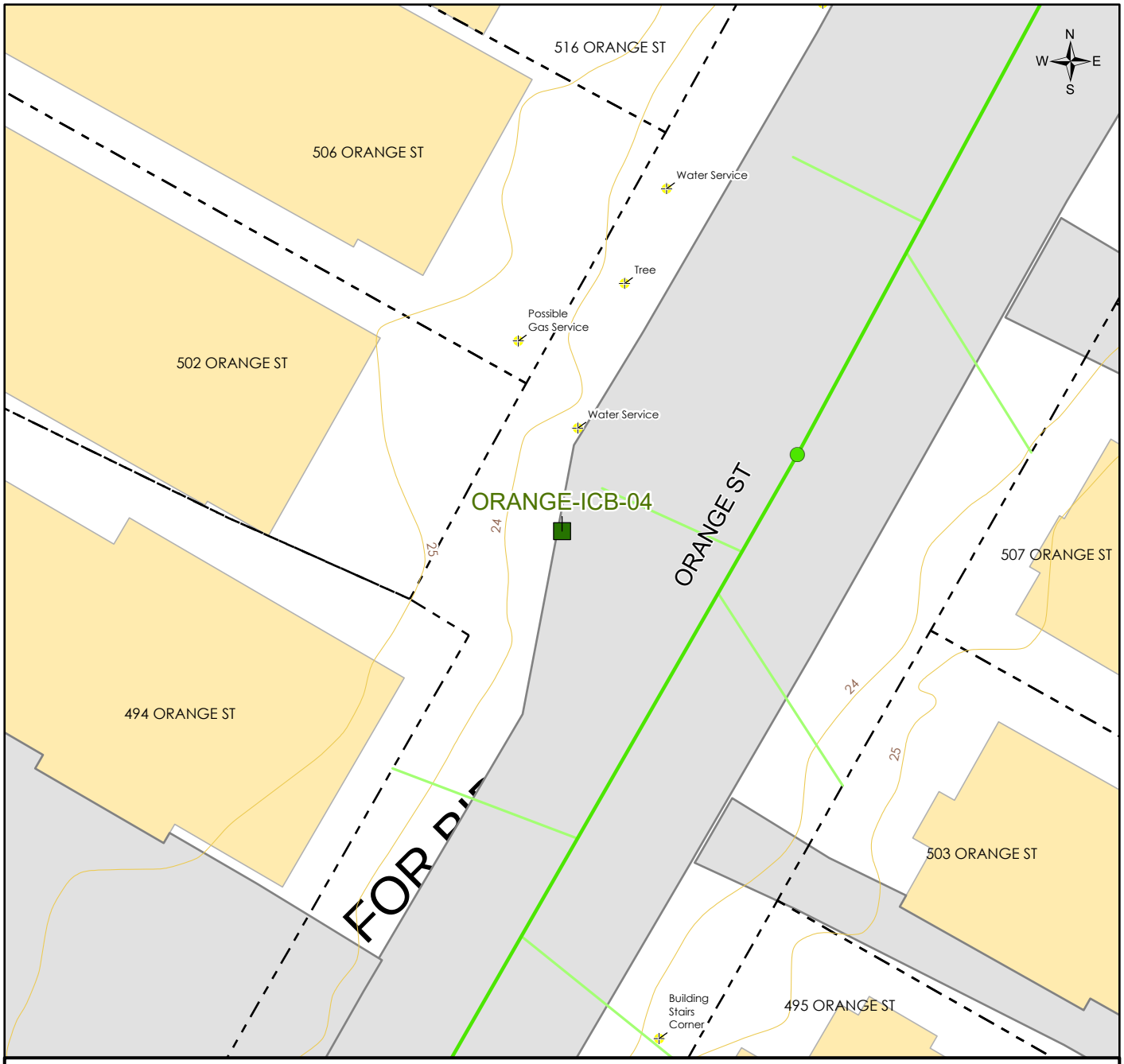

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

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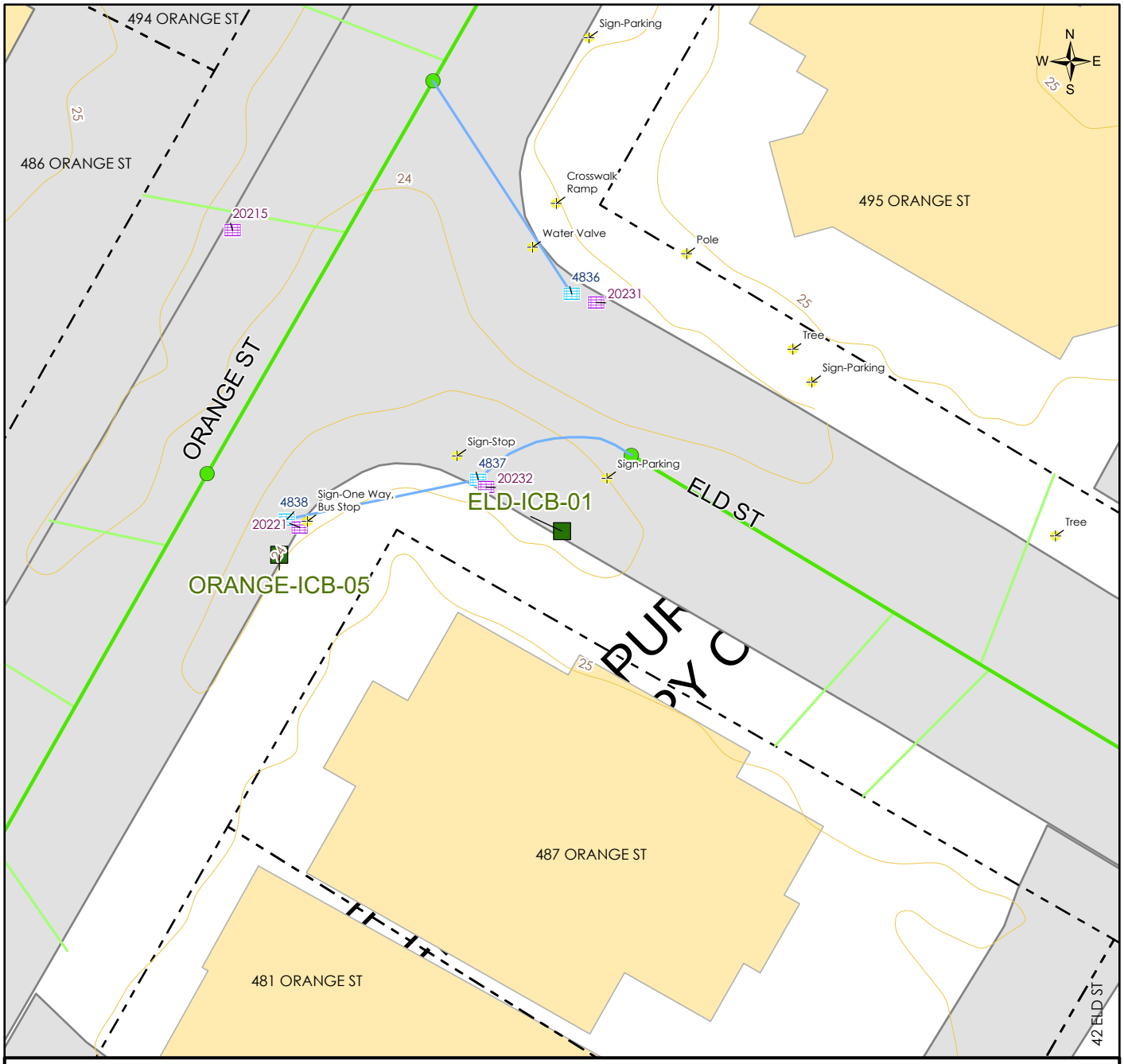

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
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- Sewer Main
- Building
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PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
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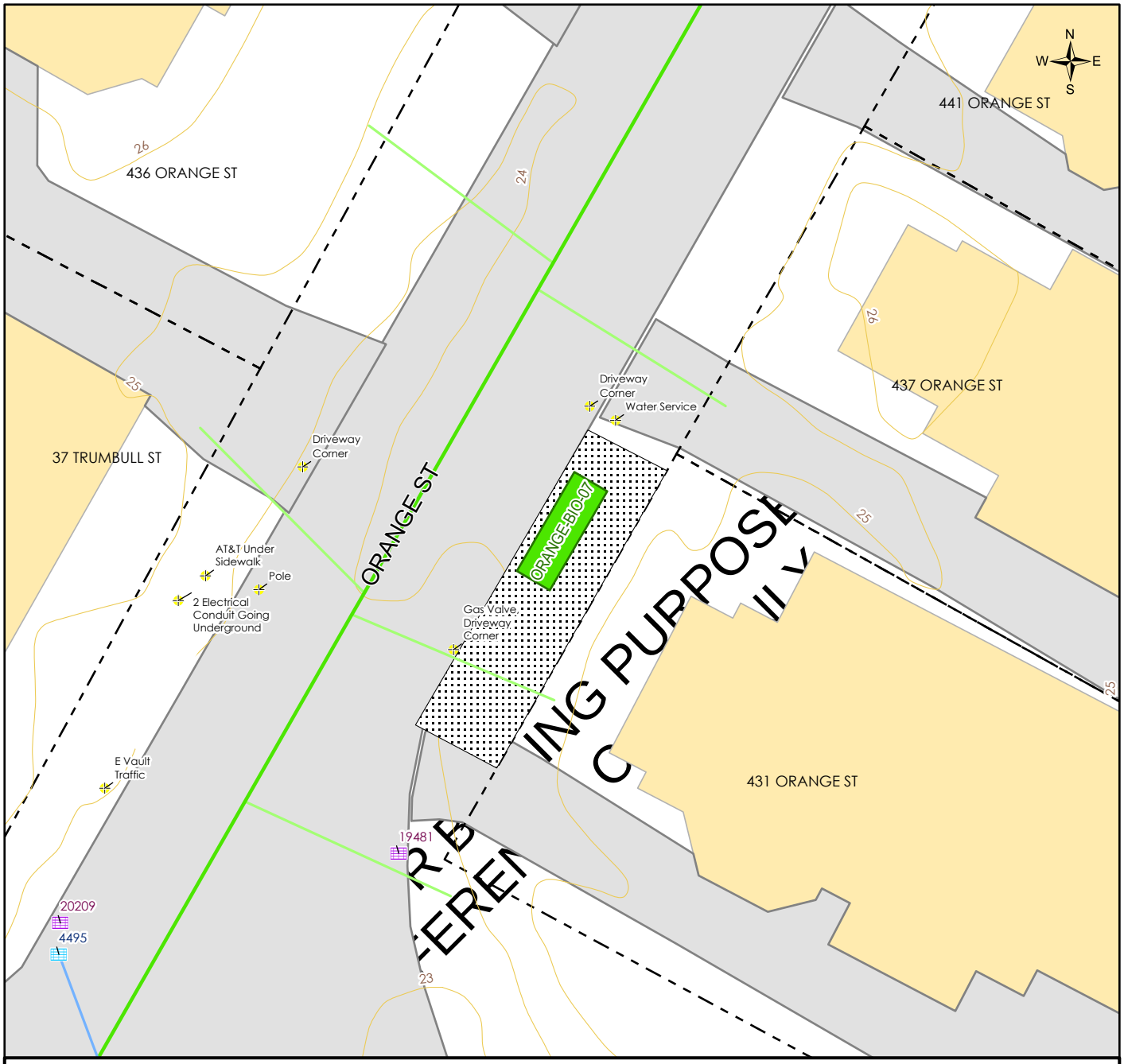

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 10'2"
SAWCUT: Yes; SIDEWALK REPAIR: Yes

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
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- Sewer MH/Structure
- Sewer Lateral
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- Pavement Edge (approx.)
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AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
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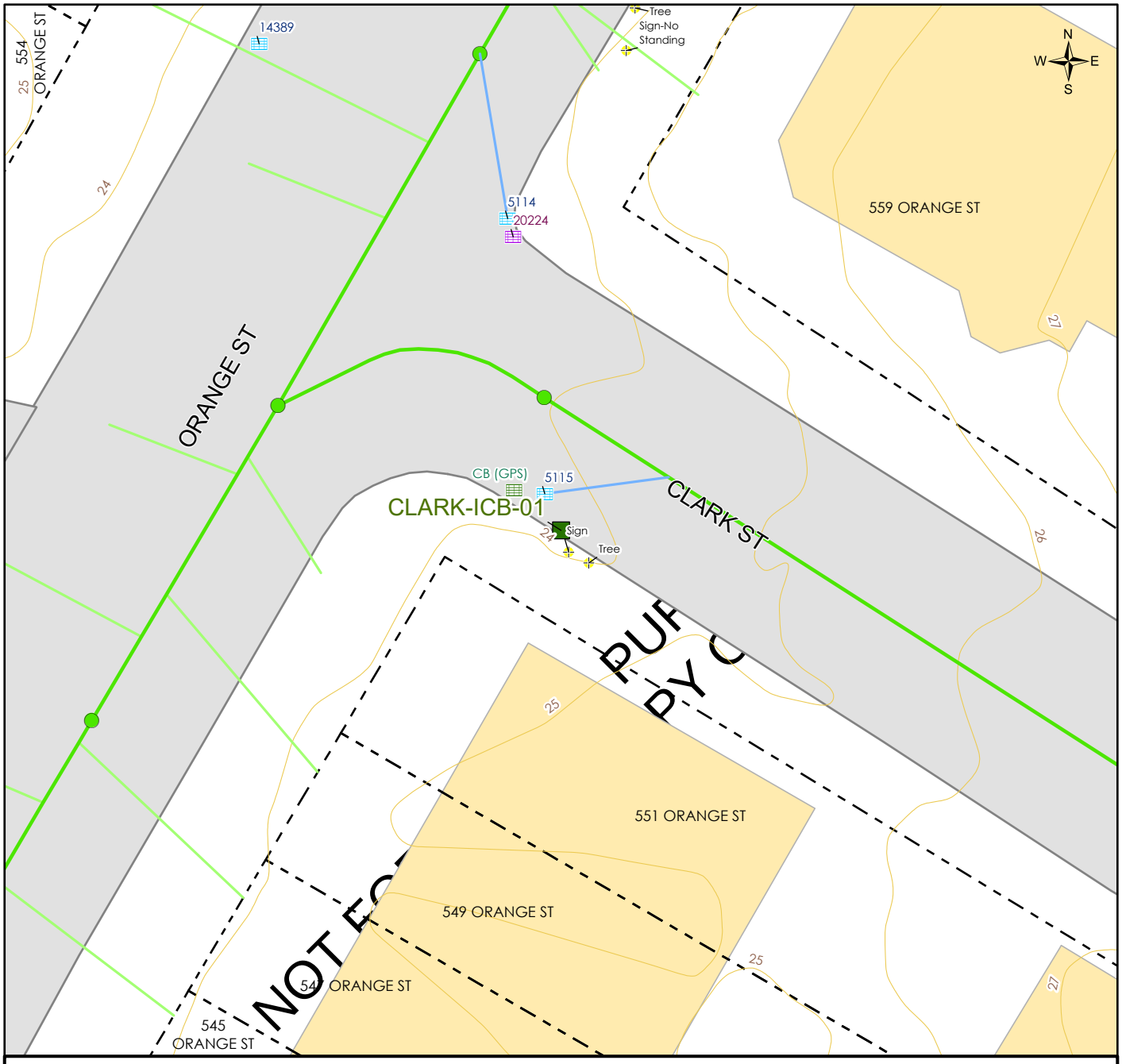

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
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GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

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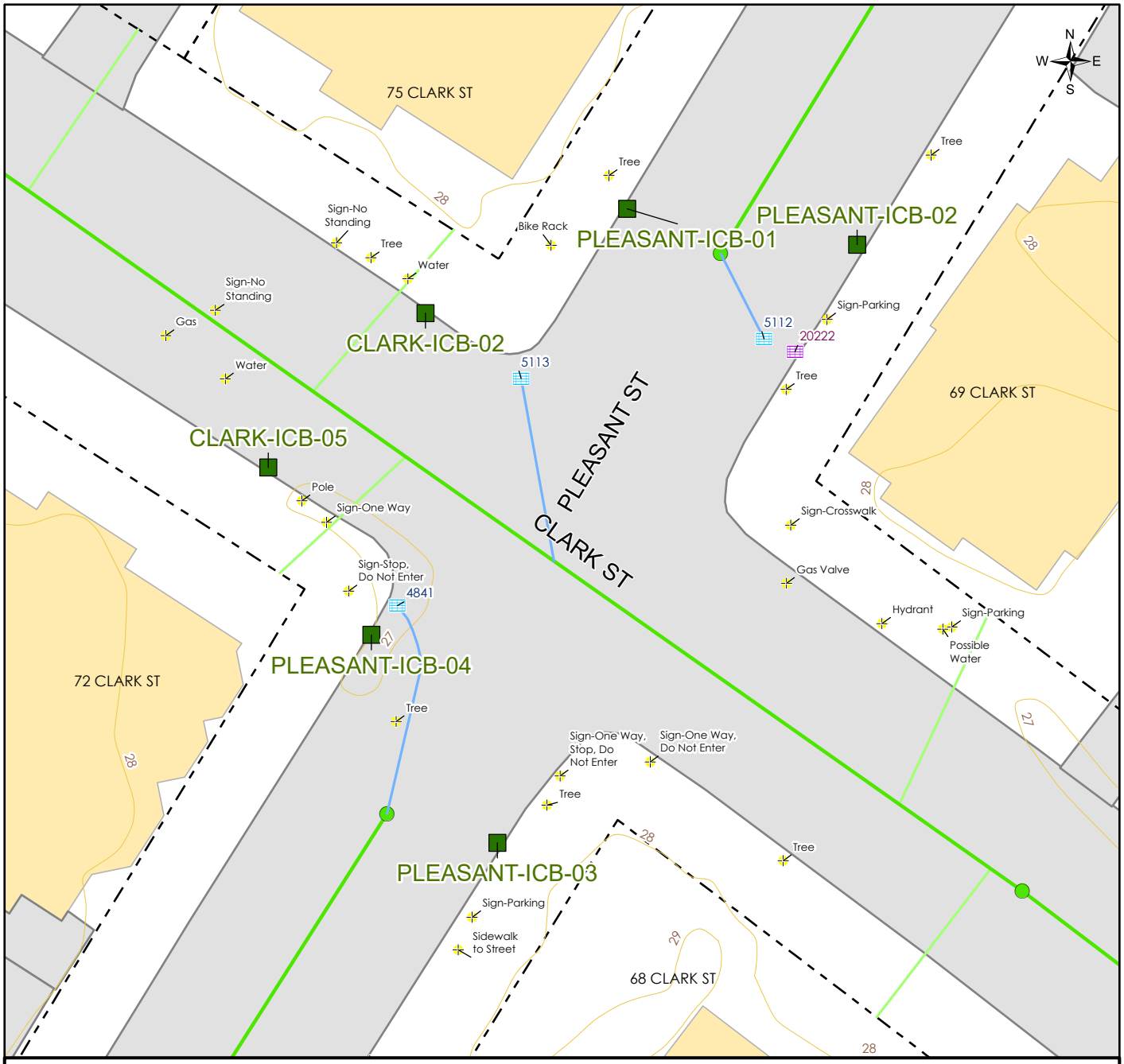

CONSTRUCTION NOTES:
CURB COMPOSITION: No; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

FUSS & O'NEILL
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MANCHESTER, CT 06040
(860) 646-2469
www.fando.com

0 5 10 20 Feet

GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
CLARK-ICB-02; CLARK-ICB-05;
PLEASANT-ICB-01;PLEASANT-ICB-02;
PLEASANT-ICB-03; PLEASANT-ICB-04

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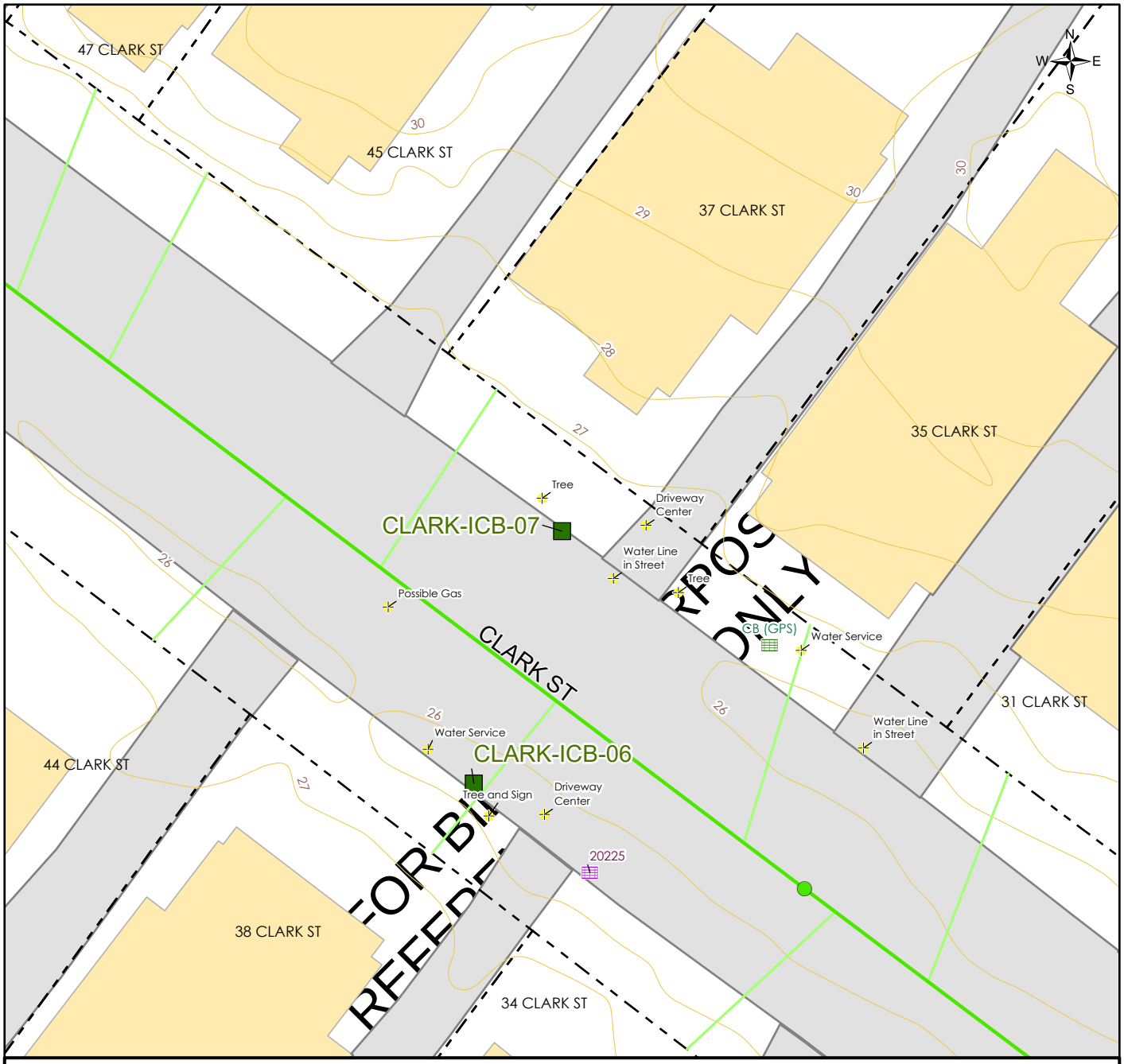

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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0 5 10 20 Feet

GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
CLARK-ICB-06;
CLARK-ICB-07

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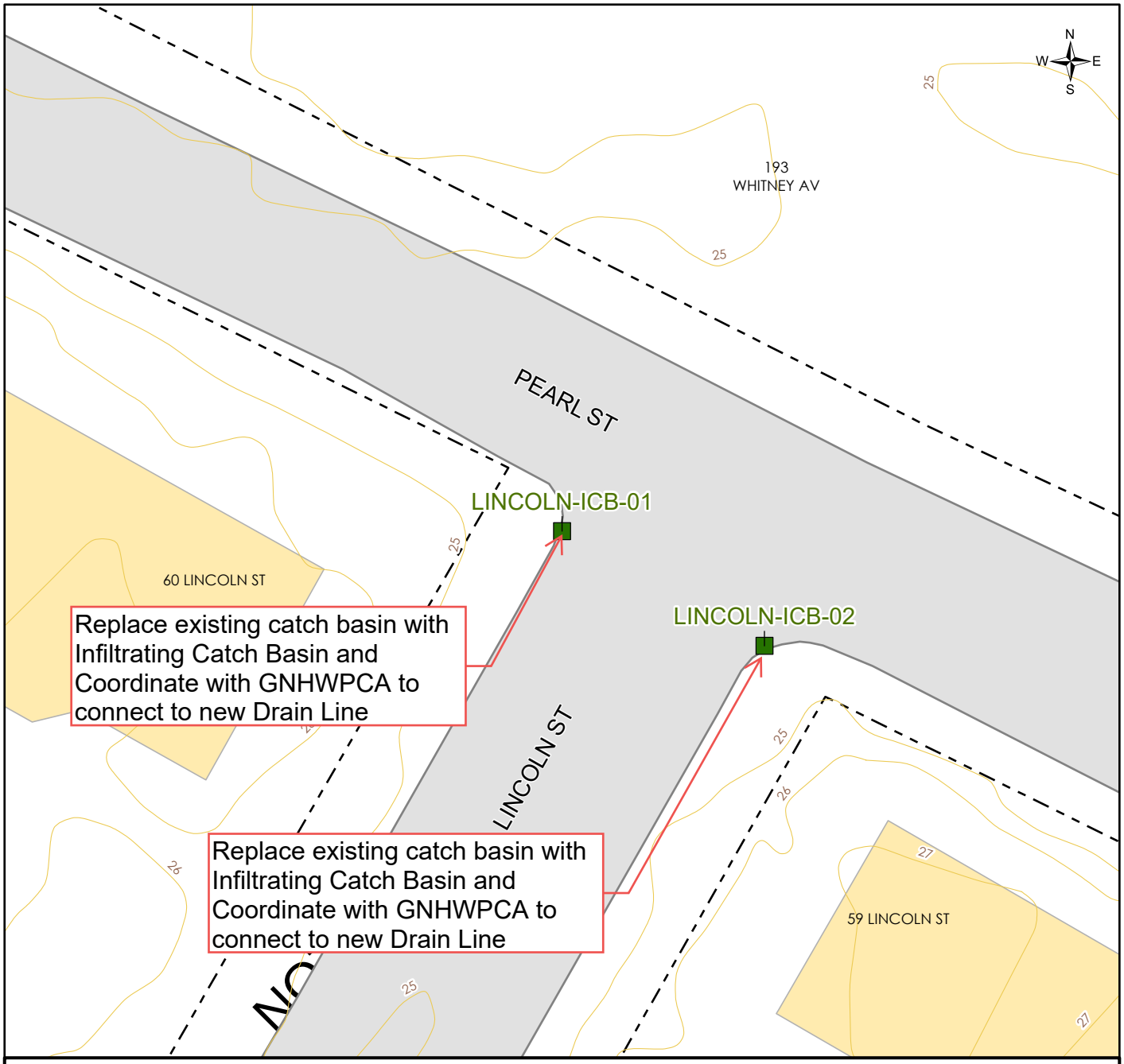

CONSTRUCTION NOTES:
CURB COMPOSITION: N/A; SIDEWALK REPAIR: No

Bioswale	Field Collected Data (GPS)	Storm Outfall	Sewer Main
Bump-out	Storm CB	Storm Lateral	Building
Proposed Infiltrating Catch Basin	Storm CB (City)	Storm Main	Parcel Boundary
Sidewalk Repair	Storm CB (GPS)	Sewer MH/Structure	Pavement Edge (approx.)
Curb Bumpout	Drain Manhole	Sewer Lateral	Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
LINCOLN-ICB-01;
LINCOLN-ICB-02

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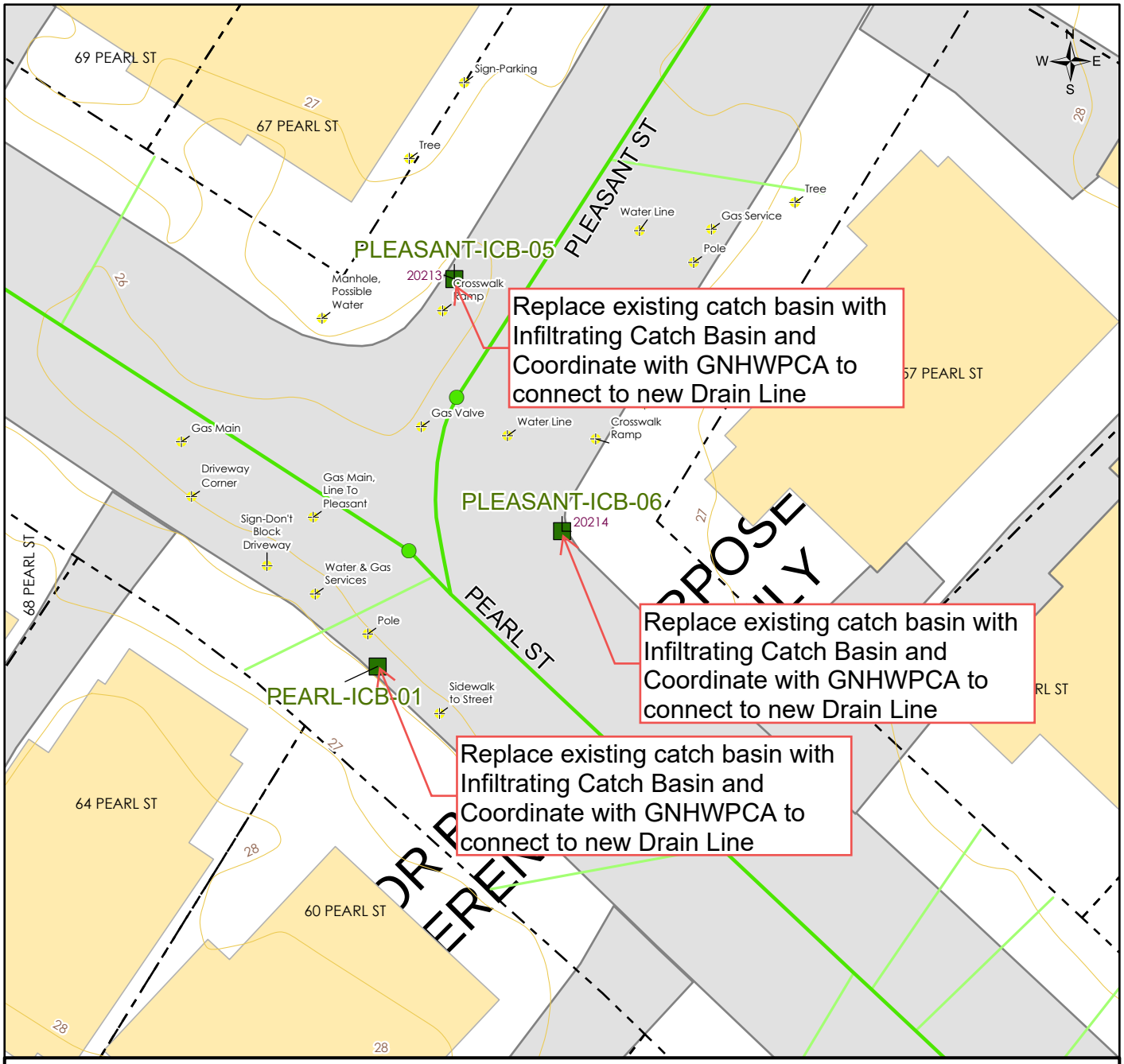

CONSTRUCTION NOTES:
CURB COMPOSITION: Bluestone; SIDEWALK REPAIR: No

Bioswale	Field Collected Data (GPS)	Storm Outfall	Sewer Main
Bump-out	Storm CB	Storm Lateral	Building
Proposed Infiltrating Catch Basin	Storm CB (City)	Storm Main	Parcel Boundary
Sidewalk Repair	Storm CB (GPS)	Sewer MH/Structure	Pavement Edge (approx.)
Curb Bumpout	Drain Manhole	Sewer Lateral	Elevation (ft)

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0 5 10 20 Feet

GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
PLEASANT-ICB-05;
PLEASANT-ICB-06;
PEARL-ICB-01

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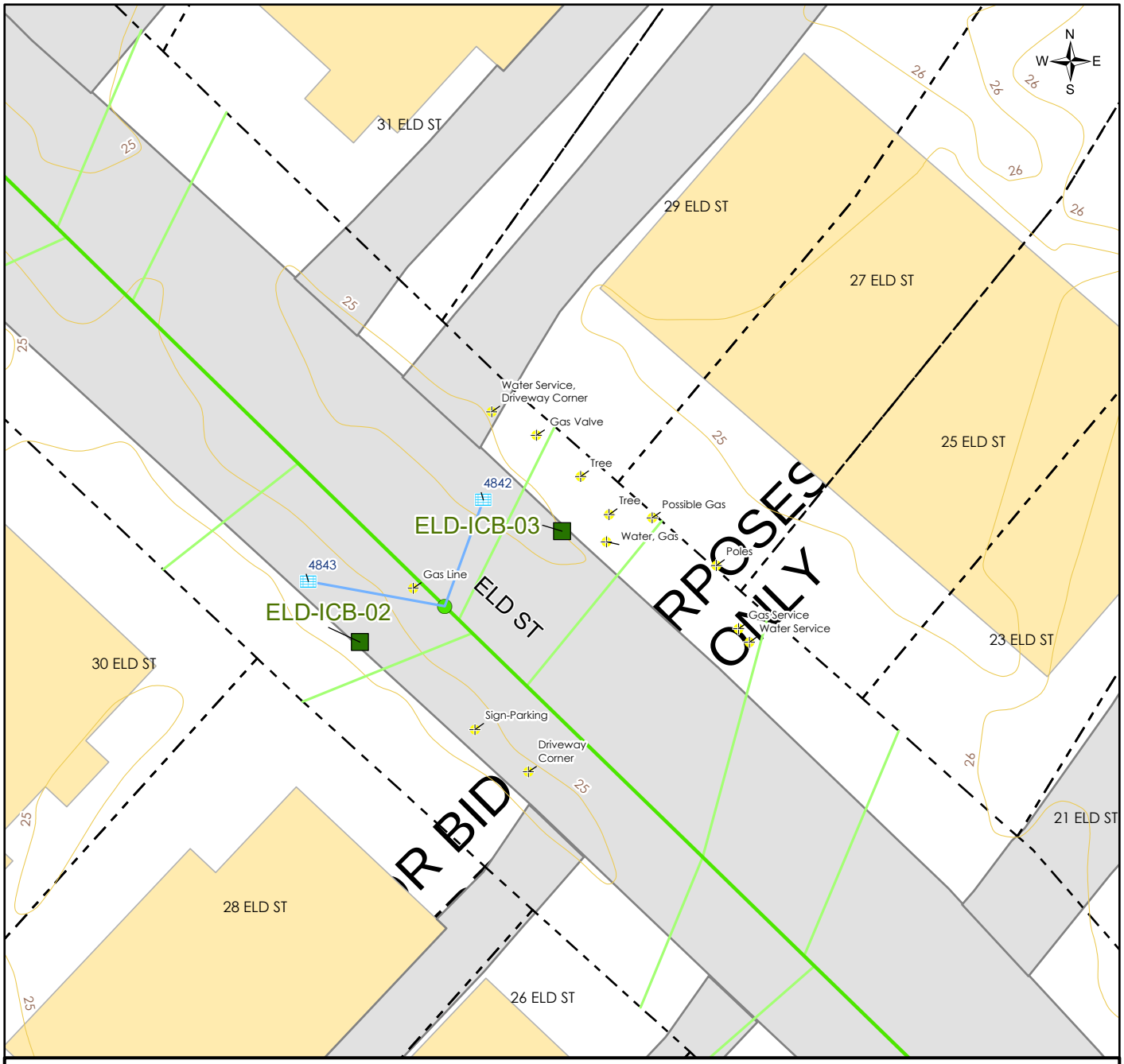

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
ELD-ICB-02;
ELD-ICB-03

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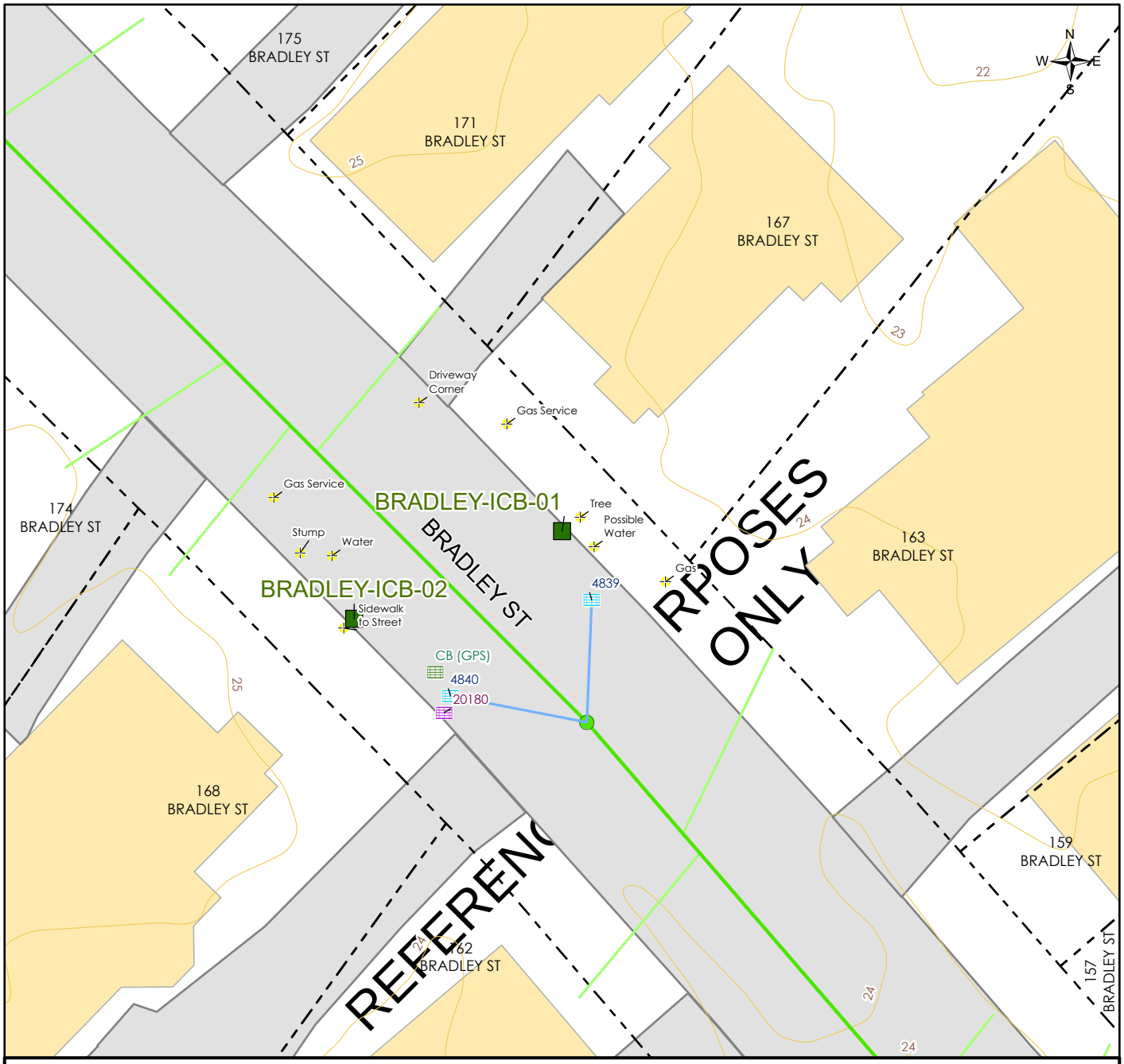

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; SIDEWALK REPAIR: No

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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0 5 10 20 Feet

GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04
YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE
NEW HAVEN CONNECTICUT

SITE:
BRADLEY-ICB-01;
BRADLEY-ICB-02

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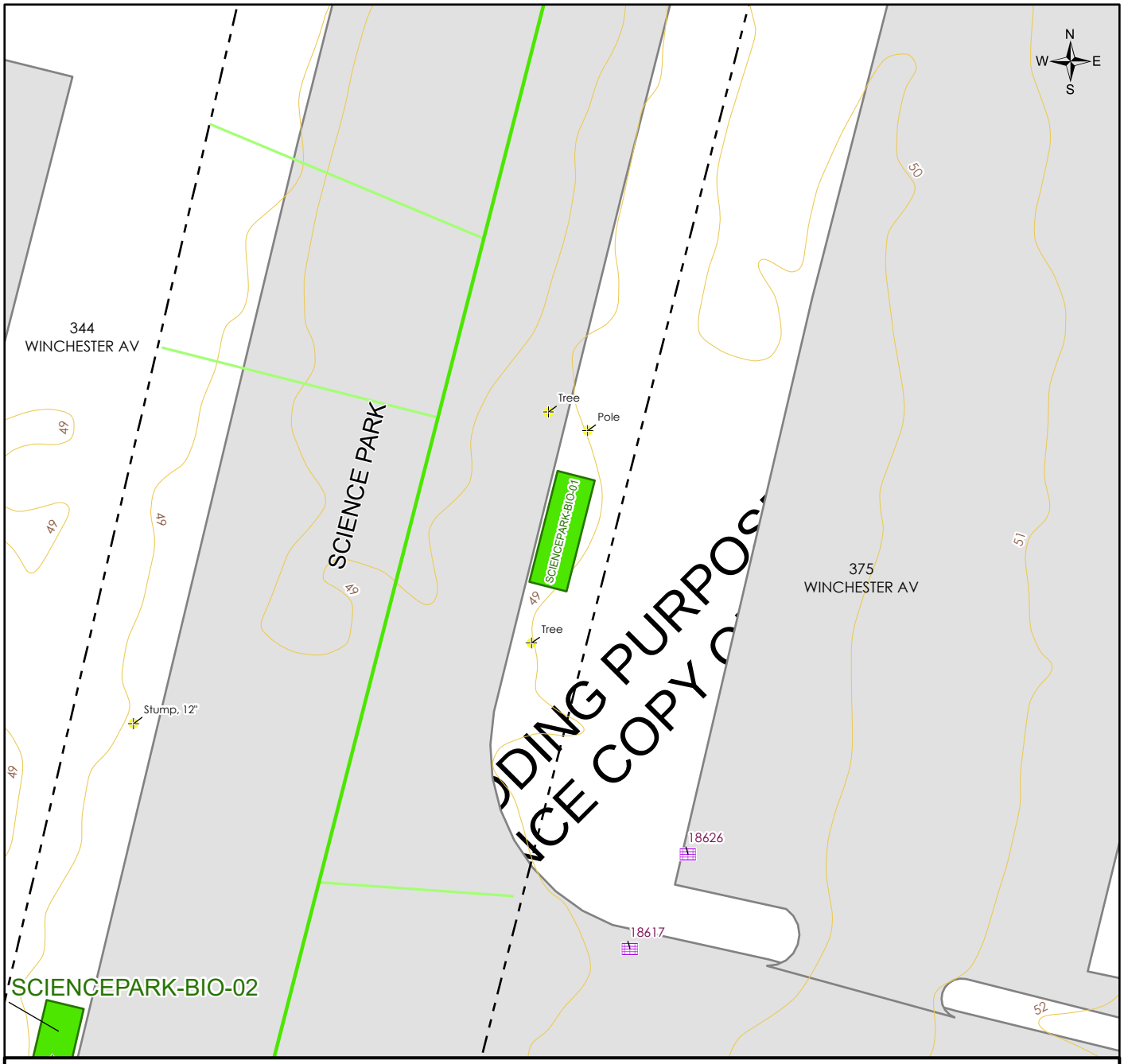

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 10'8"
SAWCUT: Yes; SIDEWALK REPAIR: No ; PAVER REPAIR: Yes

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
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- Sewer Main
- Building
- Parcel Boundary
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- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
SCIENCEPARK-BIO-01

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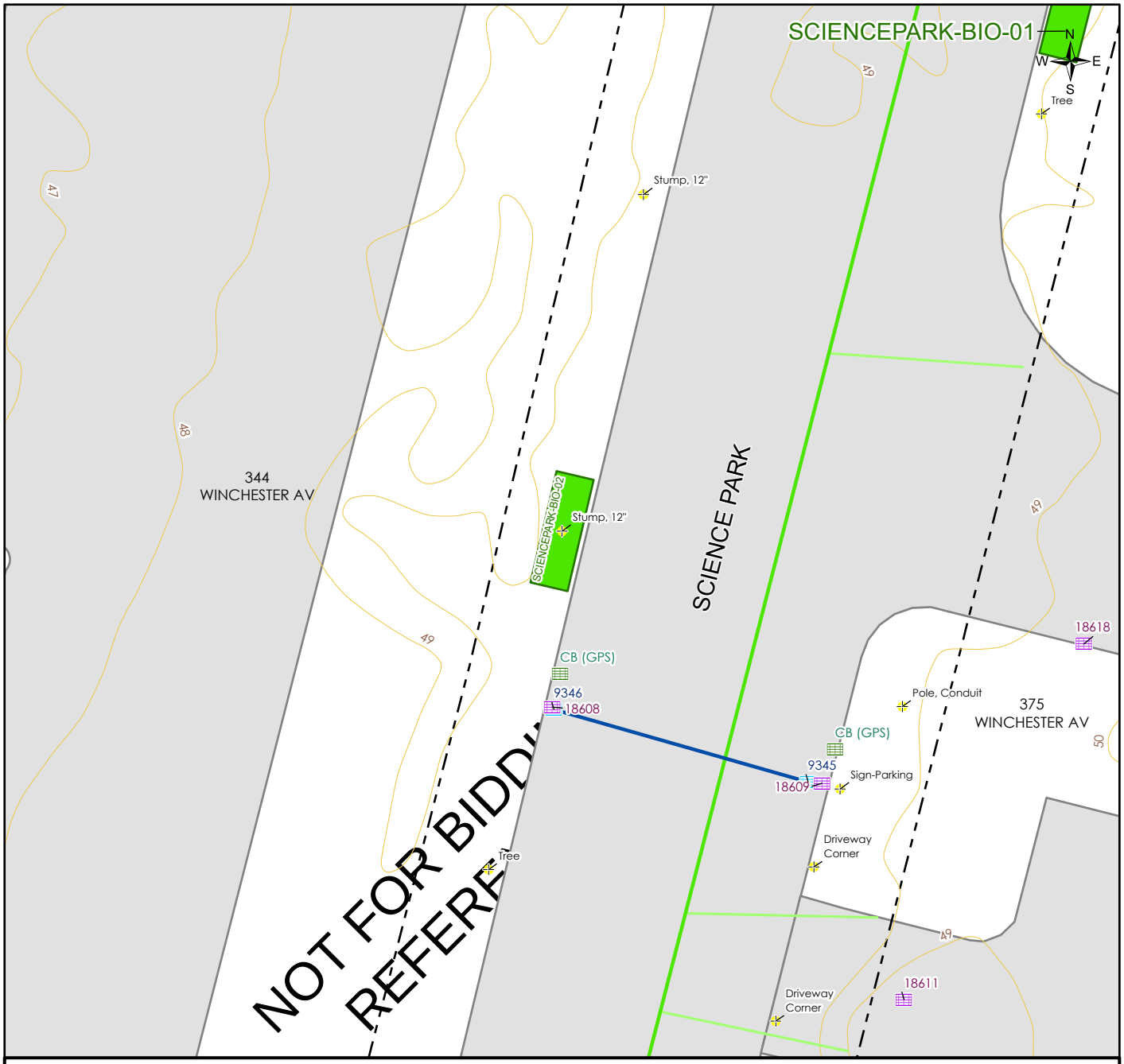

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 16'0"
SAWCUT: Yes; SIDEWALK REPAIR: No ; PAVER REPAIR: Yes

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
SCIENCEPARK-BIO-02

OCTOBER 2021

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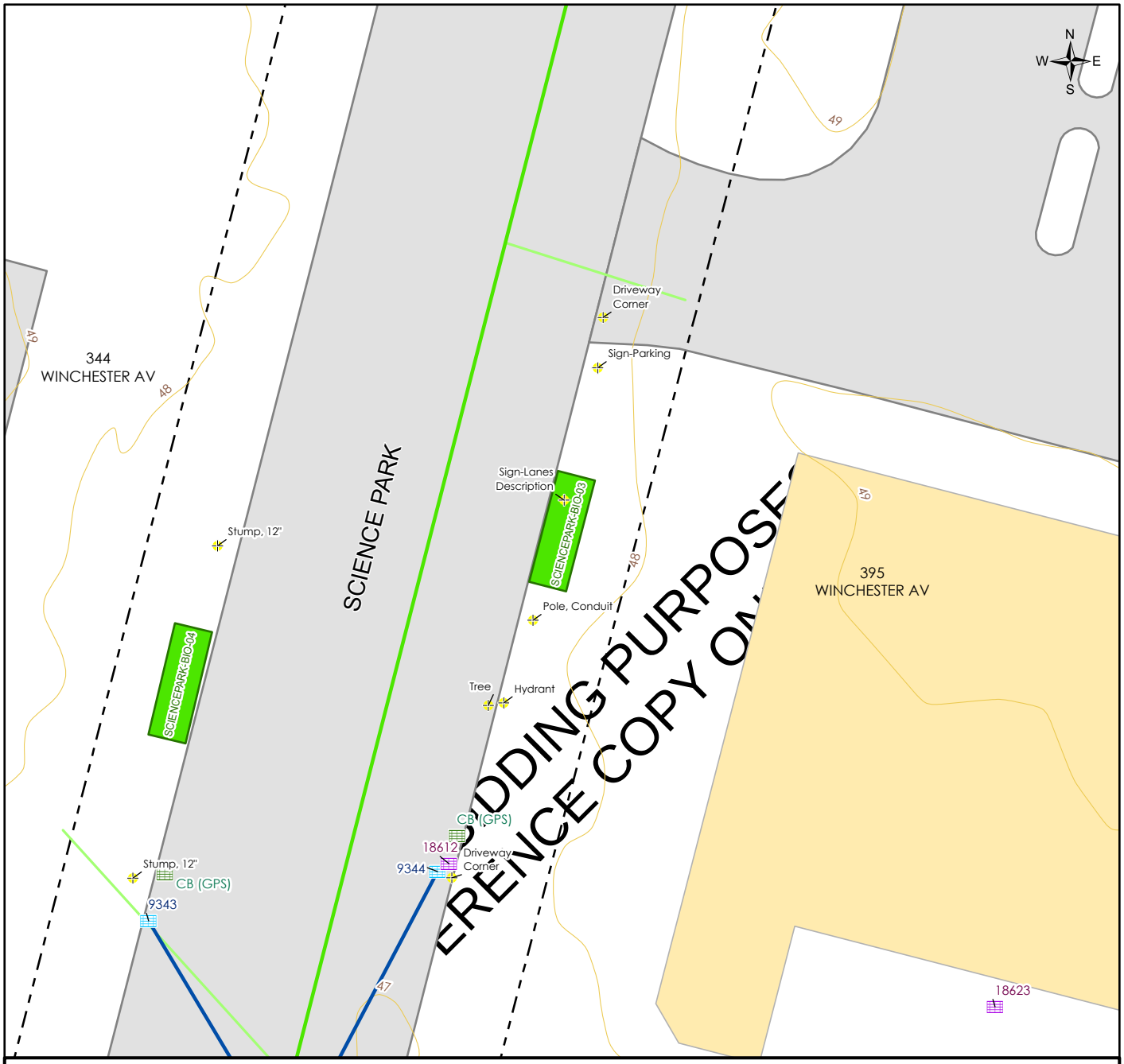

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 10'9"
SAWCUT: Yes; SIDEWALK REPAIR: No ; PAVER REPAIR: Yes

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
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- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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0 5 10 20 Feet

GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
SCIENCEPARK-BIO-03

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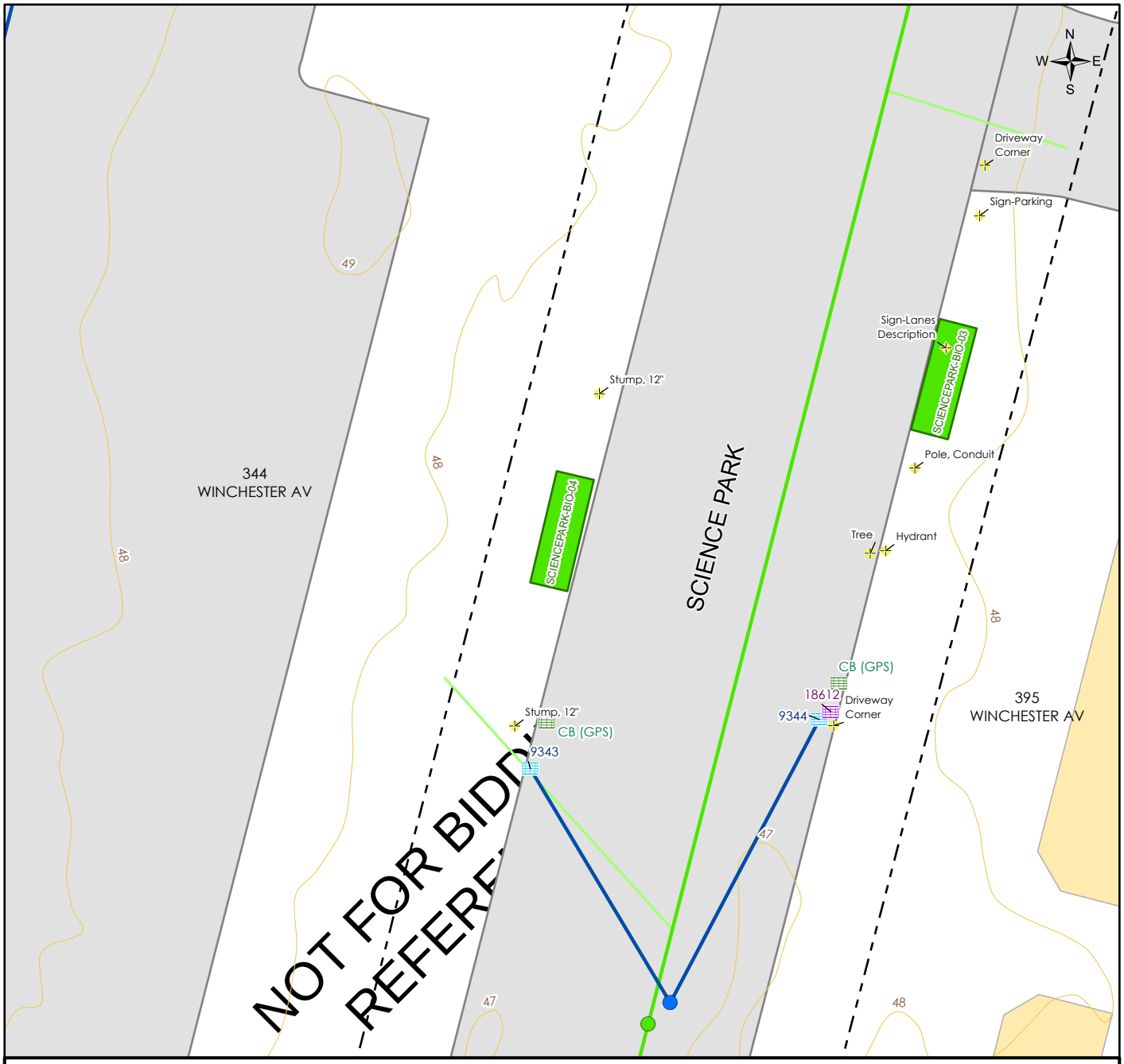

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite ; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: 16'10"
SAWCUT: Yes; SIDEWALK REPAIR: No ; PAVER REPAIR: Yes REPAIR: Yes

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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0 5 10 20 Feet

GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
SCIENCEPARK-BIO-04

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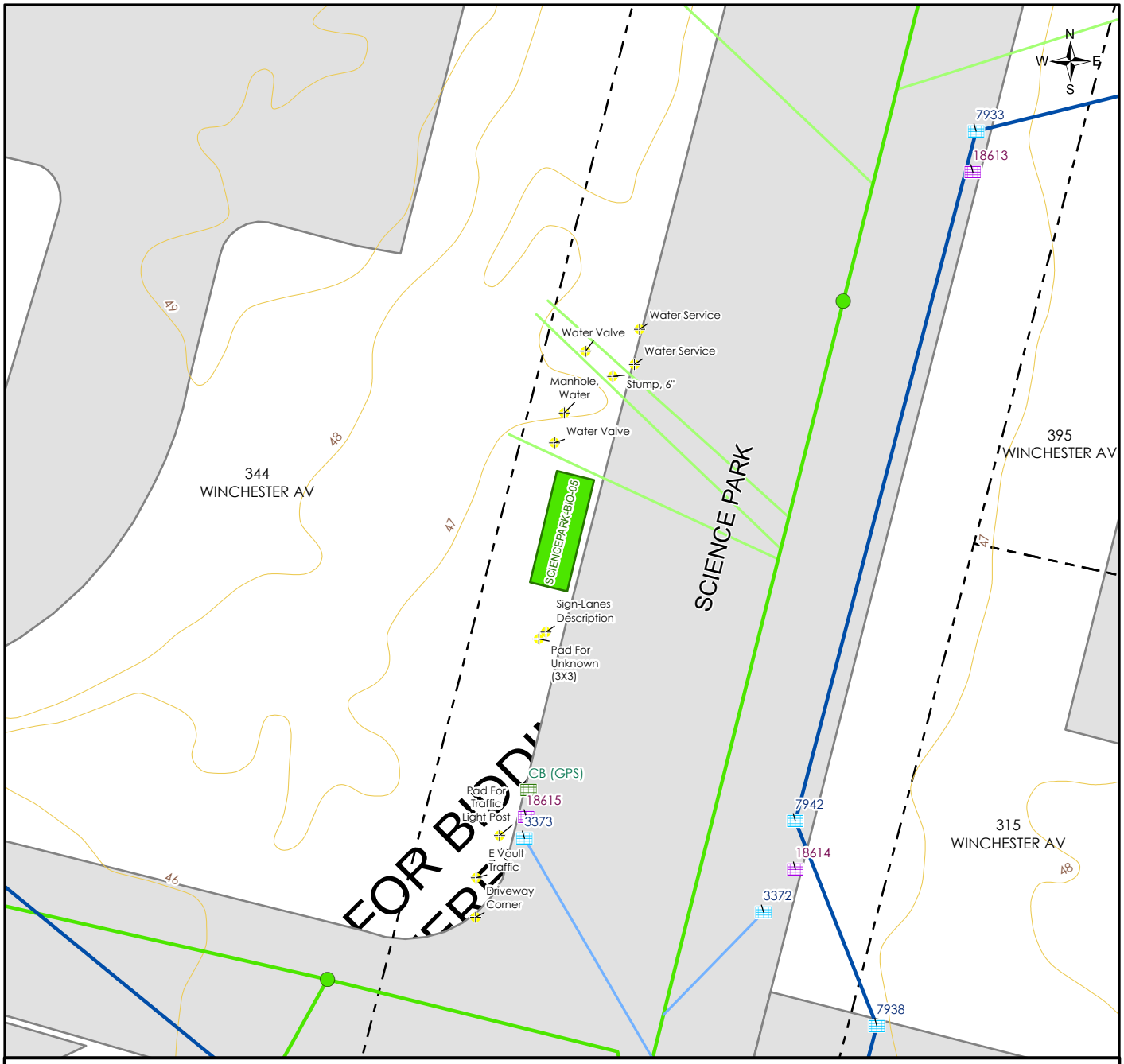

CONSTRUCTION NOTES:
CURB COMPOSITION: Granite; TREE BELT WIDTH: N/A; SIDEWALK WIDTH: N/A
SAWCUT: Yes; SIDEWALK REPAIR: No ; PAVER REPAIR: Yes

- Bioswale
- Bump-out
- Proposed Infiltrating Catch Basin
- Sidewalk Repair
- Curb Bumpout
- Field Collected Data (GPS)
- Storm CB
- Storm CB (City)
- Storm CB (GPS)
- Drain Manhole
- Storm Outfall
- Storm Lateral
- Storm Main
- Sewer MH/Structure
- Sewer Lateral
- Sewer Main
- Building
- Parcel Boundary
- Pavement Edge (approx.)
- Elevation (ft)

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0 5 10 20 Feet

GNHWPCA Protecting the Environment

GREATER NEW HAVEN WPCA
PROJECT NUMBER: CWF 2012-04

YALE CAMPUS TRUMBULL STREET
AREA SEWER SEPARATION
PHASE 2 - GREEN INFRASTRUCTURE

NEW HAVEN CONNECTICUT

SITE:
SCIENCEPARK-BIO-05

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APPENDIX D

City of New Haven Work Zone Traffic Patterns 2014

City of New Haven

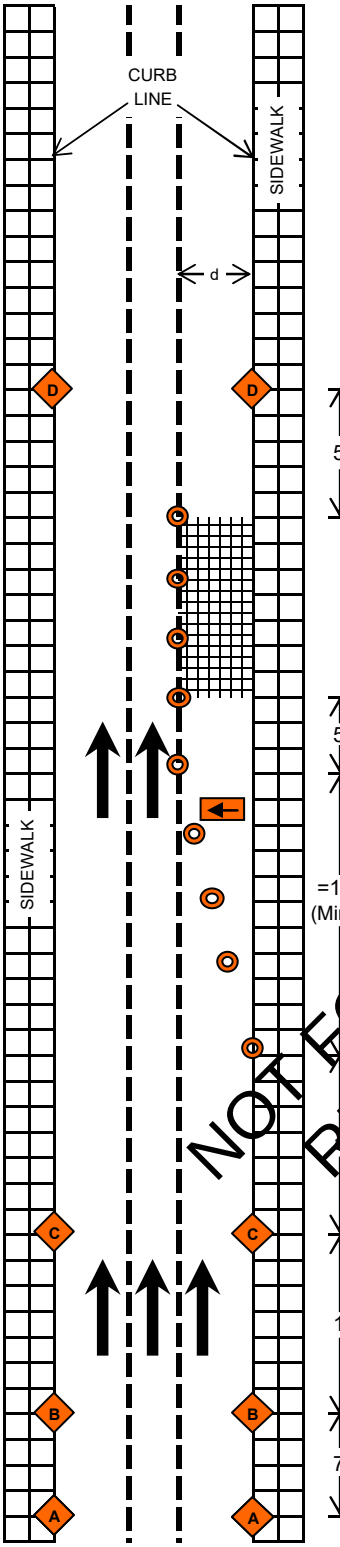
Work Zone Traffic Patterns

2014

Rev: ~~_____~~

NOT FOR BIDDING PURPOSES
REFERENCE COPY ONLY

WORK IN RIGHT LANE AND SHOULDER/PARKING LANE - ONE WAY STREET
PLAN 1



DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
(OPTIONAL FOR DAY WORK, REQUIRED FOR NIGHT WORK)

	QTY	SIGN	SIZE	MUTCD	CDOT
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602*
B	2	RIGHT LA CLSED AHEAD	30X30"	W9-3R	80-9848*
C	2	LA ENDS MERGE LEFT	30X30"	W9-2L	80-9910*
D	2	END ROAD WORK	48X24"	G20-2A	80-9612*

* CDOT catalogue numbers are for reference only
Sizes may vary

NOTE: SAME PATTERN IS APPLICABLE ON ROADWAYS WITH TWO TRAVEL LANES.

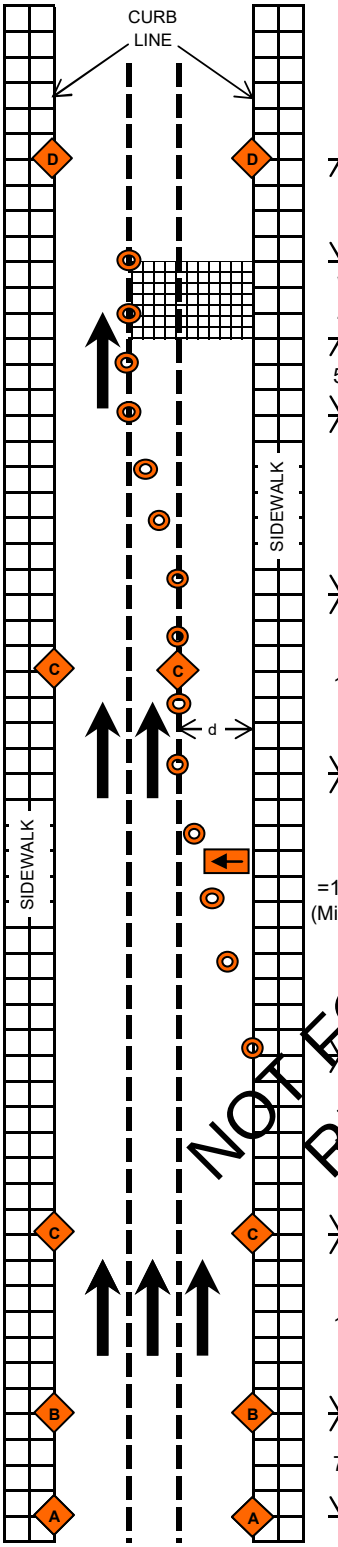
City of New Haven
Dept. of Trans., Traf. & Parking
PLAN 1

NTS

8/31/2010

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 1

WORK IN TWO RIGHT LANES AND SHOULDER/PARKING LANE - ONE WAY STREET
PLAN 2



TERM. AREA

50 FT

WORK ZONE

50 FT BUFFER AREA

125FT TAPER AREA #2

100 FT TRANSITION

=10 x d FT TAPER AREA #1
(Min 100 FT)

100 FT

100 FT

75 FT

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
(OPTIONAL FOR DAY WORK, REQUIRED FOR NIGHT WORK)

	QTY	SIGN	SIZE	MUTCD	CDOT
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602*
B	2	RT TWO LA CLSED AHD	30X30"	W20-5a	80-9838*
C	4	LA ENDS MERGE LEFT	30X30"	W9-2L	80-9910*
D	2	END ROAD WORK	48X24"	G20-2A	80-9612*

* CDOT catalogue numbers are for reference only
Sizes may vary

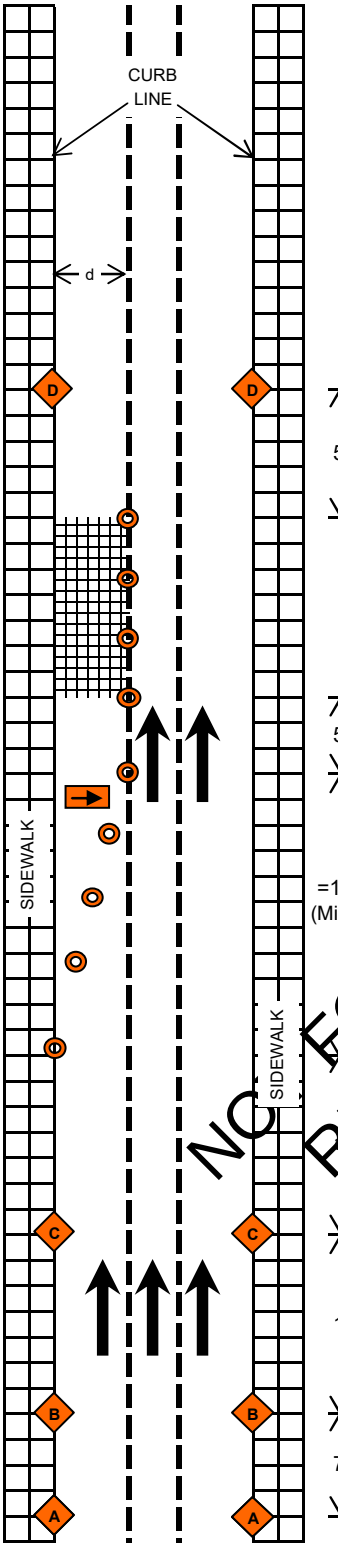
City of New Haven
Dept. of Trans., Traf. & Parking
PLAN 2

NTS

9/1/2010

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 2

WORK IN LEFT LANE AND SHOULDER/PARKING LANE - ONE WAY STREET
PLAN 3



DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
(OPTIONAL FOR DAY WORK, REQUIRED FOR NIGHT WORK)

	QTY	SIGN	SIZE	MUTCD	CDOT
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602*
B	2	LEFT LA CLSED AHEAD	30X30"	W9-3L	80-9847*
C	2	LA ENDS MERGE RIGHT	30X30"	W9-2R	80-9911*
D	2	END ROAD WORK	48X24"	G20-2A	80-9612*

* CDOT catalogue numbers are for reference only
Sizes may vary

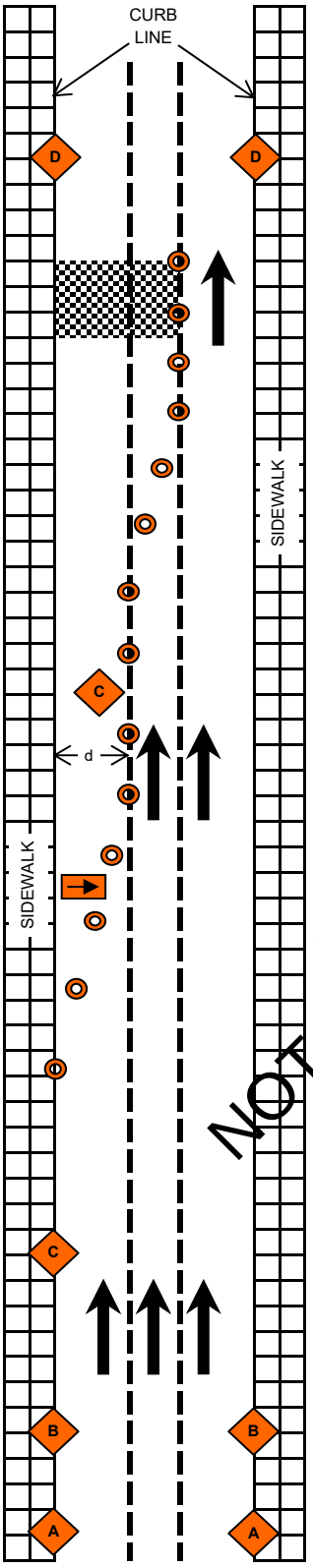
NOTE: SAME PATTERN IS APPLICABLE ON ROADWAYS WITH TWO TRAVEL LANES.

City of New Haven
Dept. of Trans., Traf. & Parking
PLAN 3

NTS

9/2/2010

WORK IN TWO LEFT LANES AND SHOULDER/PARKING LANE - ONE WAY STREET
PLAN 4



TERM. AREA

50 FT

WORK ZONE

50 FT BUFFER AREA

125FT TAPER AREA #2

50 FT

50 FT

=10 x d FT (Min 100 FT) TAPER AREA #1

100 FT

100 FT

75 FT

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW (OPTIONAL FOR DAY WORK, REQUIRED FOR NIGHT WORK)

W20-5aL

	QTY	SIGN	SIZE	MUTCD	CDOT
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602*
B	2	LFT TWO LA CLSED AHD	30X30"	W20-5aL	80-9838*
C	2	LA ENDS MERGE RIGHT	30X30"	W9-2R	80-9910*
D	2	END ROAD WORK	48X24"	G20-2A	80-9612*

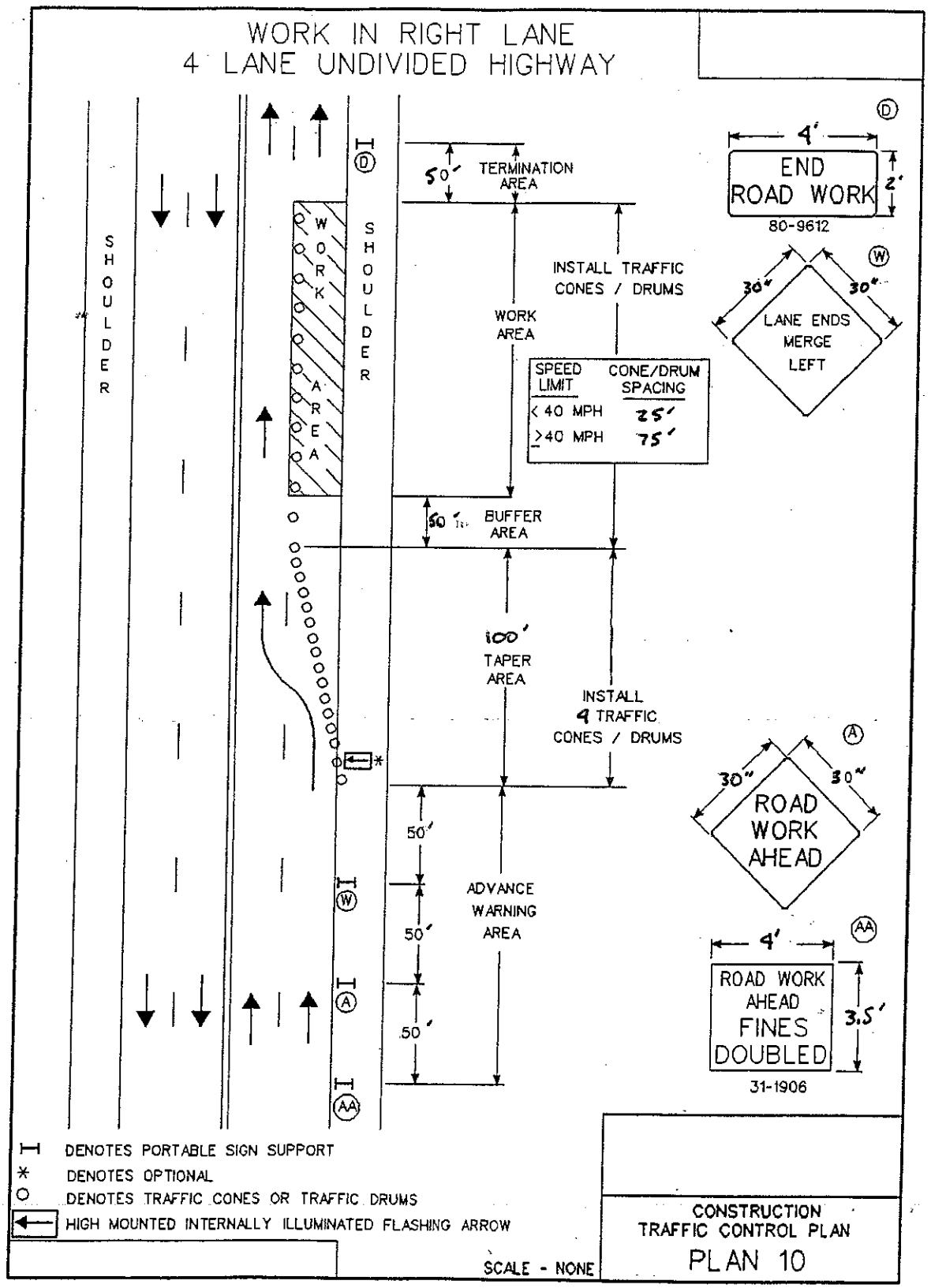
* CDOT catalogue numbers are for reference only. Sizes may vary.

City of New Haven
Dept. of Trans., Traf. & Parking
PLAN 4

NTS

10/25/2010

WORK IN RIGHT LANE
4 LANE UNDIVIDED HIGHWAY

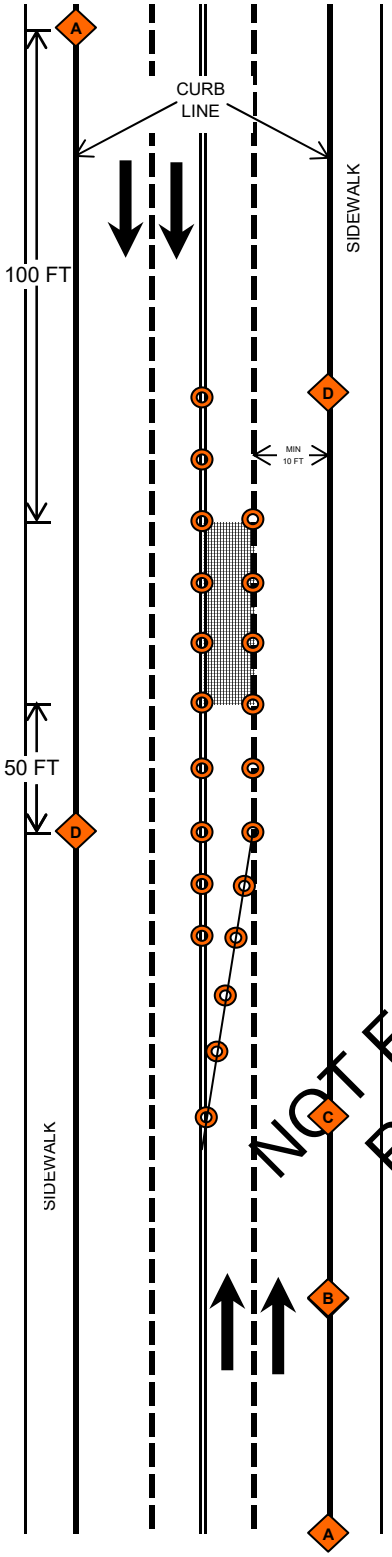


SCALE - NONE

CONSTRUCTION
TRAFFIC CONTROL PLAN

PLAN 10

WORK IN LEFT LANE - FOUR LANE TWO WAY STREET
PLAN 11



DRUM/CONE SPACING: 25 FT

SIGNS: a. PER SPECIFICATION OF THE M.U.T.C.D.
b. WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

50 FT TERMINATION AREA

WORK ZONE

50 FT BUFFER AREA

TAPER AREA

100 FT

ADVANCE WARNING AREA

100 FT

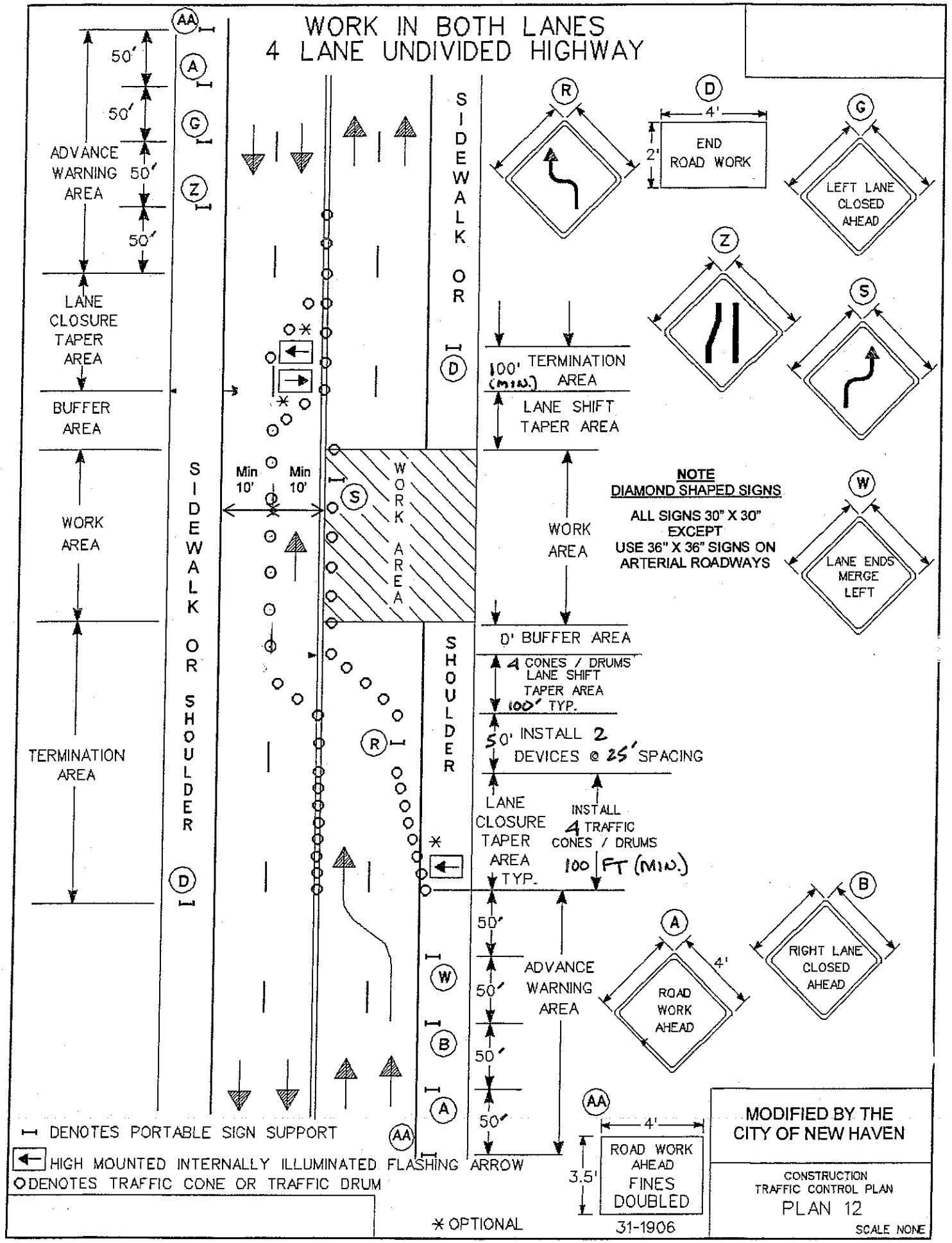
	QTY	SIGN	SIZE	MUTCD	CDOT*
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	LEFT LANE CLSD AHD	30X30"	W20-5L	80-9847
C	1	LEFT LANE ENDS	30X30"	W4-2L	80-9918
D	2	END ROAD WORK	48X24"	G20-2A	80-9612

* CDOT catalogue numbers are for reference only. Sizes may vary.

City of New Haven
Dept. of Trans., Traf. & Parking
Work Zone Traffic Control
PLAN 11

NTS
6/14/2011
Rev. 1 7/5/11

WORK IN BOTH LANES
4 LANE UNDIVIDED HIGHWAY



NOTE
DIAMOND SHAPED SIGNS

ALL SIGNS 30" X 30" EXCEPT USE 36" X 36" SIGNS ON ARTERIAL ROADWAYS

I DENOTES PORTABLE SIGN SUPPORT

HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

○ DENOTES TRAFFIC CONE OR TRAFFIC DRUM

* OPTIONAL

31-1906

MODIFIED BY THE CITY OF NEW HAVEN

CONSTRUCTION TRAFFIC CONTROL PLAN

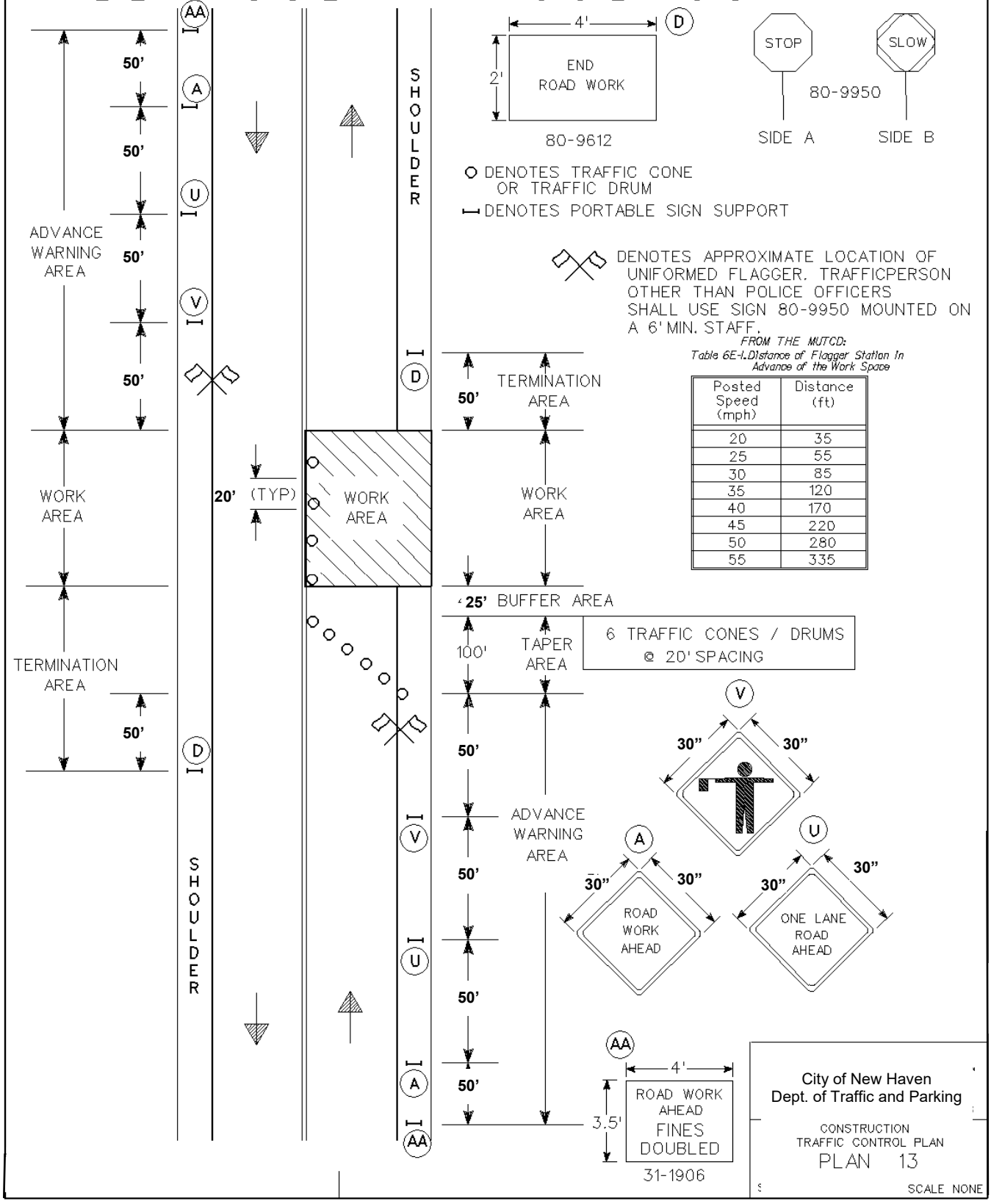
PLAN 12

SCALE NONE

DATE 5/11/07

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

This drawing has been modified to accommodate urban conditions.



FROM THE MUTCD:
Table 6E-1.Distance of Flagger Station In Advance of the Work Space

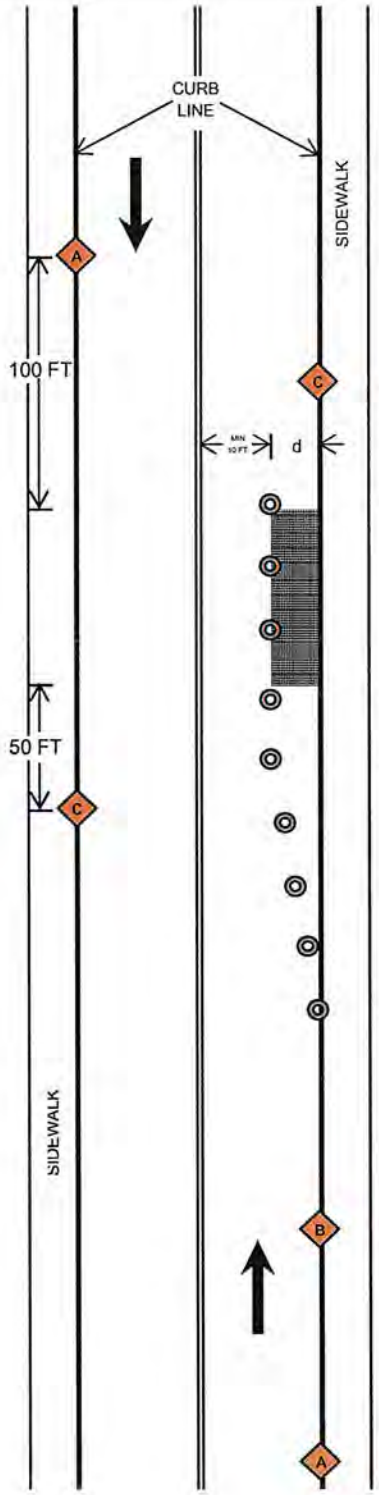
Posted Speed (mph)	Distance (ft)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335

City of New Haven
Dept. of Traffic and Parking

CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13

SCALE NONE

WORK IN SHOULDER/PARKING LANE - TWO WAY STREET
PLAN 14



DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES 42" TRAFFIC DRUM OR (MIN.) 28" TRAFFIC CONE

DENOTES TRAFFIC SIGN

50 FT TERMINATION AREA

WORK ZONE

25 FT BUFFER AREA

10 x d FT TAPER AREA 100 FT MIN

100 FT

ADVANCE WARNING AREA

100 FT

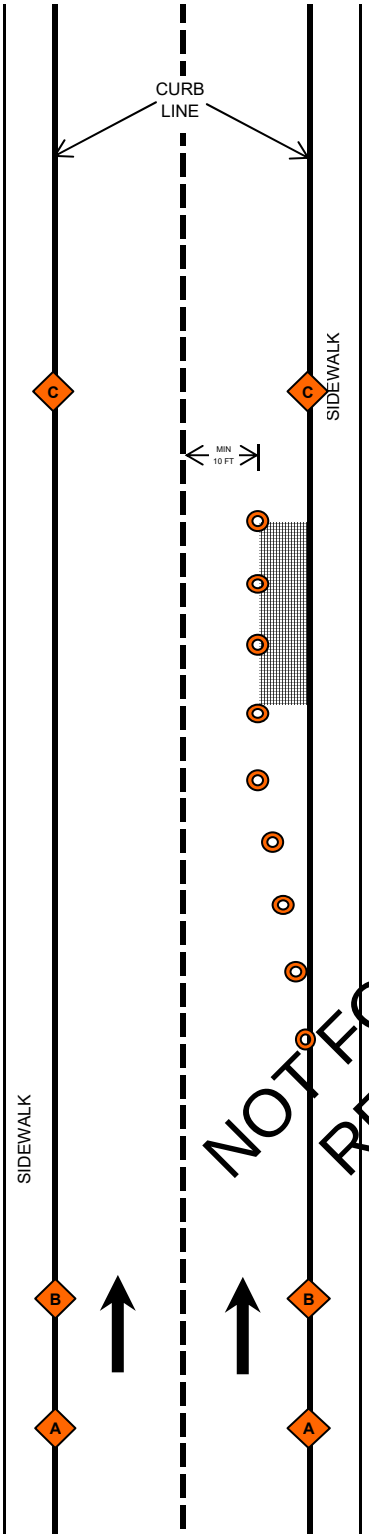
QTY		SIGN	SIZE	MUTCD	CDOT*
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	SHOULDER CLOSED	30X30"	W21-5aR	NA
C	2	END ROAD WORK	48X24"	G20-2A	80-9612

* CDOT catalogue numbers are for reference only.
Sizes may vary.

City of New Haven
Dept. of Trans., Traf. & Parking
Work Zone Traffic Control
PLAN 14

NTS
1/15/2009
Rev 1. 7/15/11

WORK IN SHOULDER/PARKING LANE - ONE WAY STREET
PLAN 14 A



DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

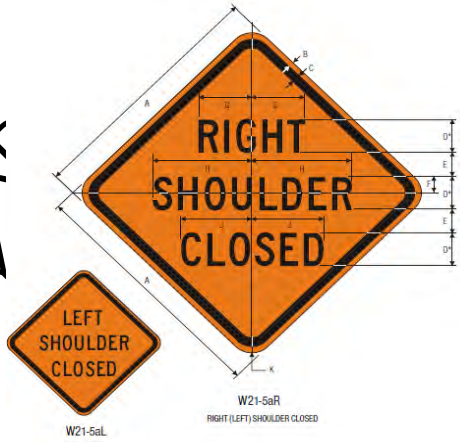
	MUTCD	CDOT
SIGNS(2): END ROAD WORK 48X24	G20-2A	80-9612

TERMINATION AREA

WORK ZONE

BUFFER AREA

TAPER AREA



	QTY	SIGN	SIZE	MUTCD	CDOT*
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	SHOULDER CLOSED	30X30"	W21-5aR	NA
C	2	END ROAD WORK	48X24"	G20-2A	80-9612

* CDOT catalogue numbers are for reference only.
Sizes may vary.

	MUTCD	CDOT
SIGNS(2): SHOULDER CLOSED 30X30	W21-5a**	NA
SIGNS(2): ROAD WORK AHEAD 30X30	W20-1	80-9602

**

NOTE: FOR WORK IN RIGHT SHOULDER USE W21-5a(R).
FOR WORK IN LEFT SHOULDER, USE W21-5a(L) AND
SET UP PATTERN ON OPPOSITE SIDE OF ROADWAY.

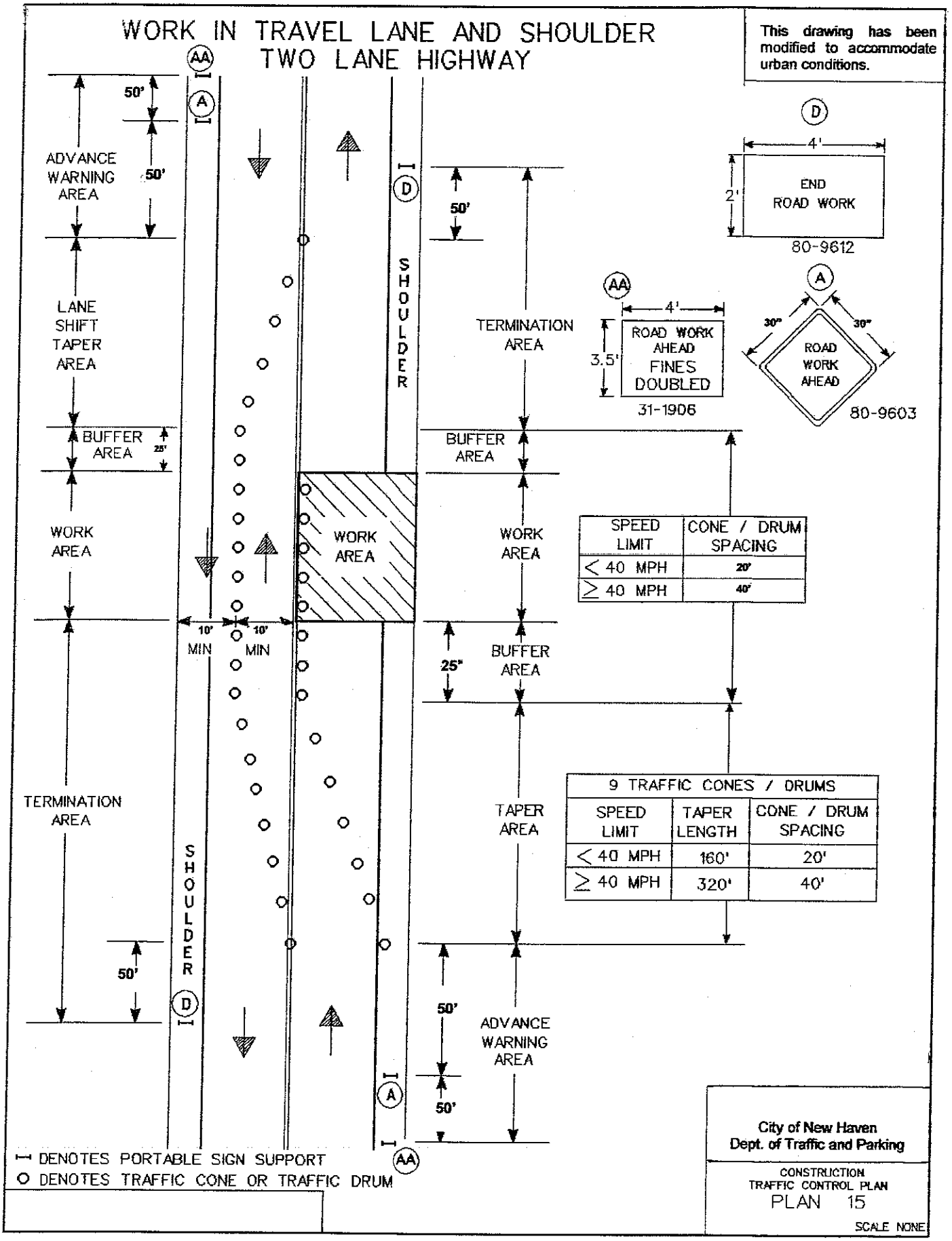
City of New Haven
Dept. of Trans., Traf. & Parking
Work Zone Traffic Control
PLAN 14 A

NTS

1/29/09
Rev. 1. 4/1/11

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY

This drawing has been modified to accommodate urban conditions.



SPEED LIMIT	CONE / DRUM SPACING
< 40 MPH	20'
≥ 40 MPH	40'

9 TRAFFIC CONES / DRUMS		
SPEED LIMIT	TAPER LENGTH	CONE / DRUM SPACING
< 40 MPH	160'	20'
≥ 40 MPH	320'	40'

I DENOTES PORTABLE SIGN SUPPORT
O DENOTES TRAFFIC CONE OR TRAFFIC DRUM

City of New Haven
Dept. of Traffic and Parking

CONSTRUCTION
TRAFFIC CONTROL PLAN
PLAN 15

SCALE NONE

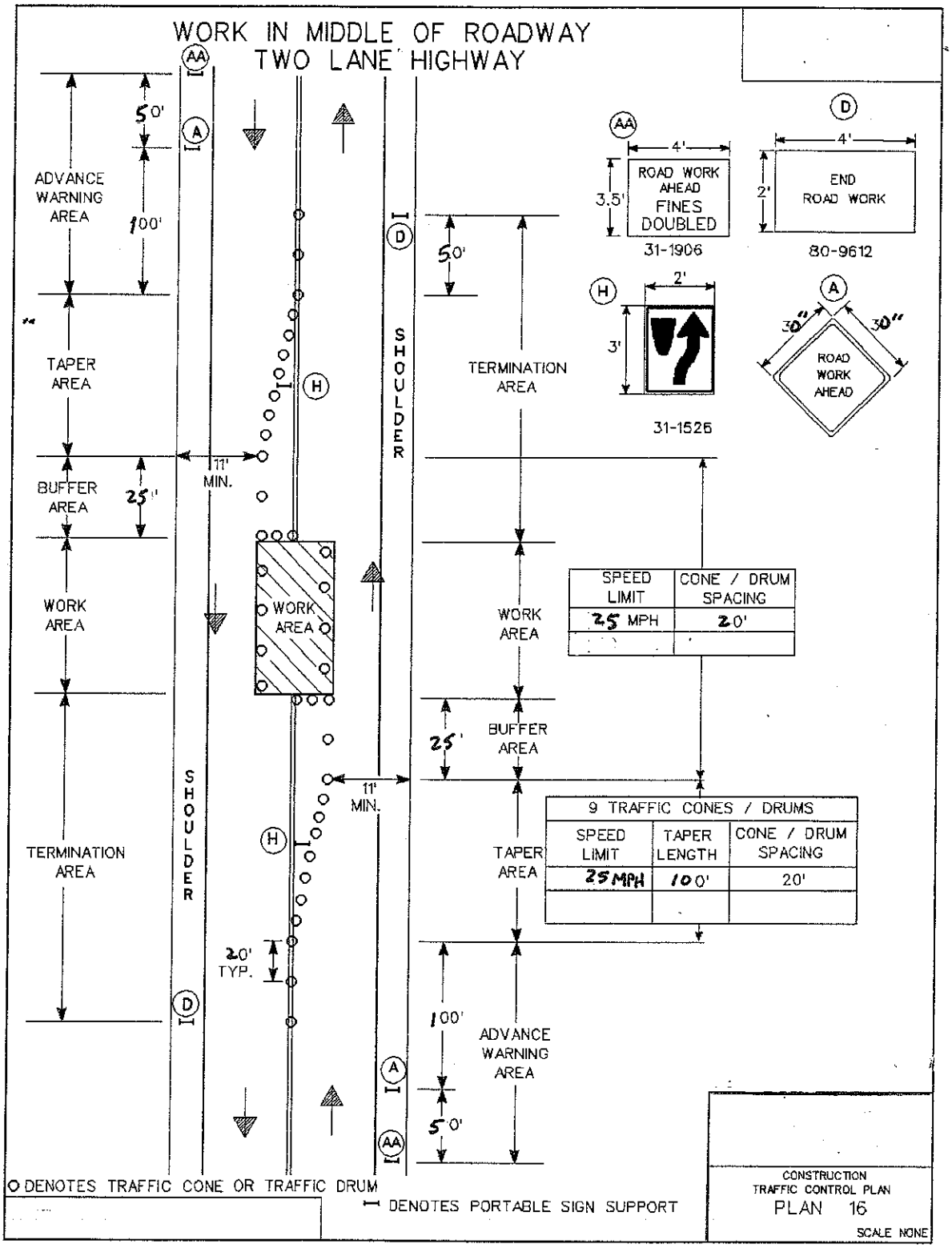
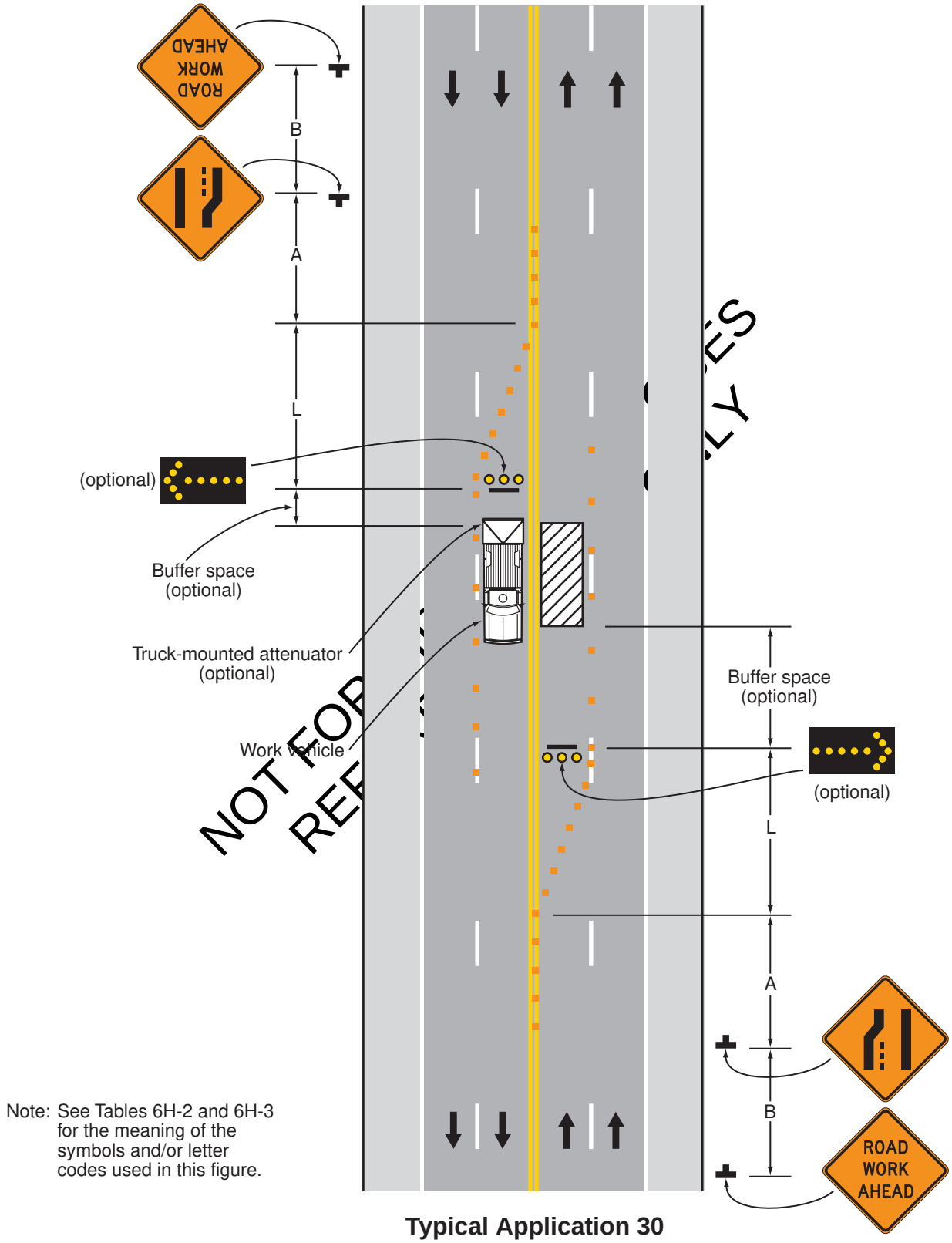

WORK IN MIDDLE OF ROADWAY
TWO LANE HIGHWAY
AA
A
D
H
50'
100'
ADVANCE WARNING AREA
TAPER AREA
BUFFER AREA
25'
WORK AREA
TERMINATION AREA
11' MIN.
SHOULDER
20' TYP.
ROAD WORK AHEAD
FINES DOUBLED
4'
3.5'
31-1906
END ROAD WORK
2'
80-9612
2'
3'
31-1526
30"
ROAD WORK AHEAD
SPEED LIMIT
CONE / DRUM SPACING
25 MPH
20'
9 TRAFFIC CONES / DRUMS
SPEED LIMIT
TAPER LENGTH
CONE / DRUM SPACING
25 MPH
100'
20'
O DENOTES TRAFFIC CONE OR TRAFFIC DRUM
DENOTES PORTABLE SIGN SUPPORT
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 16
SCALE NONE

Figure 6H-30. Interior Lane Closure on a Multi-Lane Street (TA-30)



Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 30

Plan #16A

Table 6H-2. Meaning of Symbols on Typical Application Diagrams

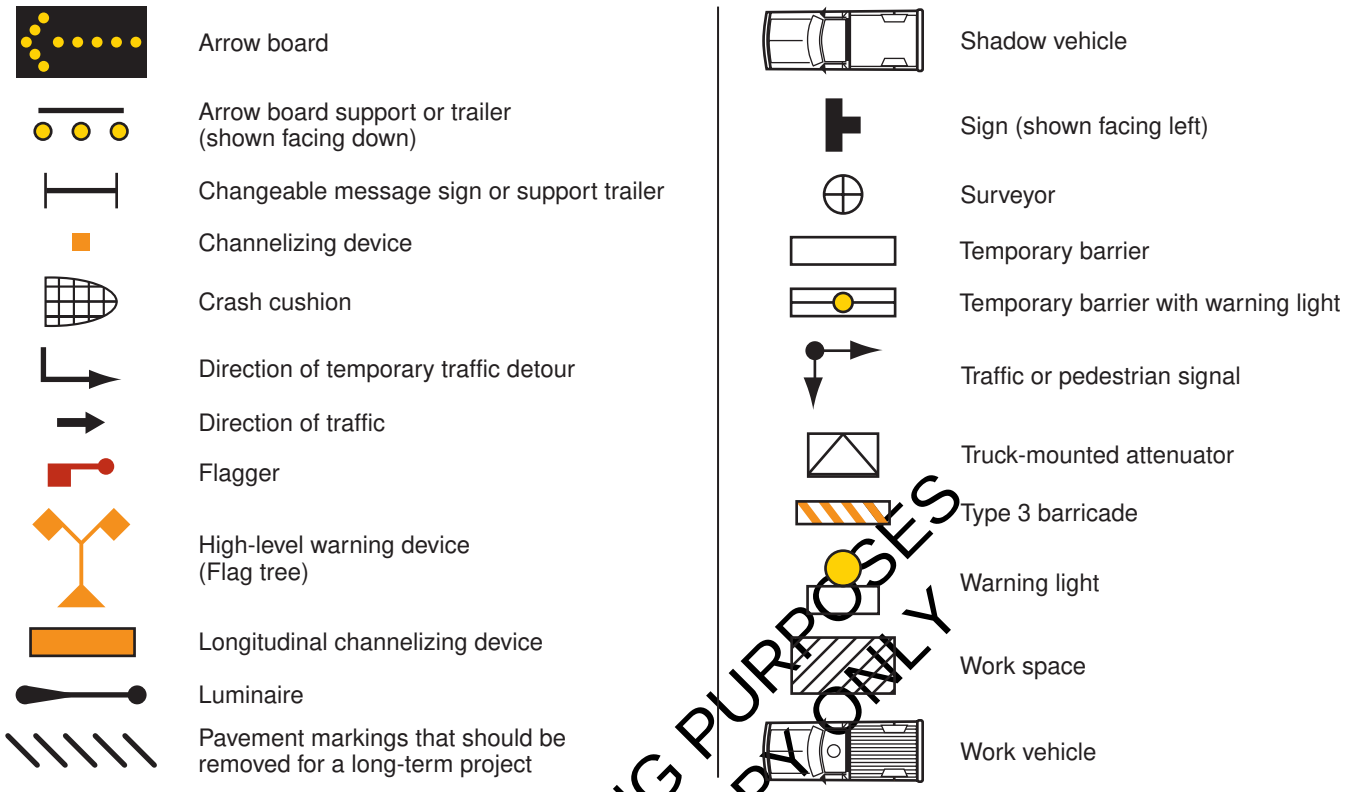


Table 6H-3. Meaning of Letter Codes on Typical Application Diagrams

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

* Speed category to be determined by highway agency

** The column headings A, B, and C are the dimensions shown in Figures 6H-1 through 6H-46. The A dimension is the distance from the transition or point of restriction to the first sign. The B dimension is the distance between the first and second signs. The C dimension is the distance between the second and third signs. (The "first sign" is the sign in a three-sign series that is closest to the TTC zone. The "third sign" is the sign that is furthest upstream from the TTC zone.)

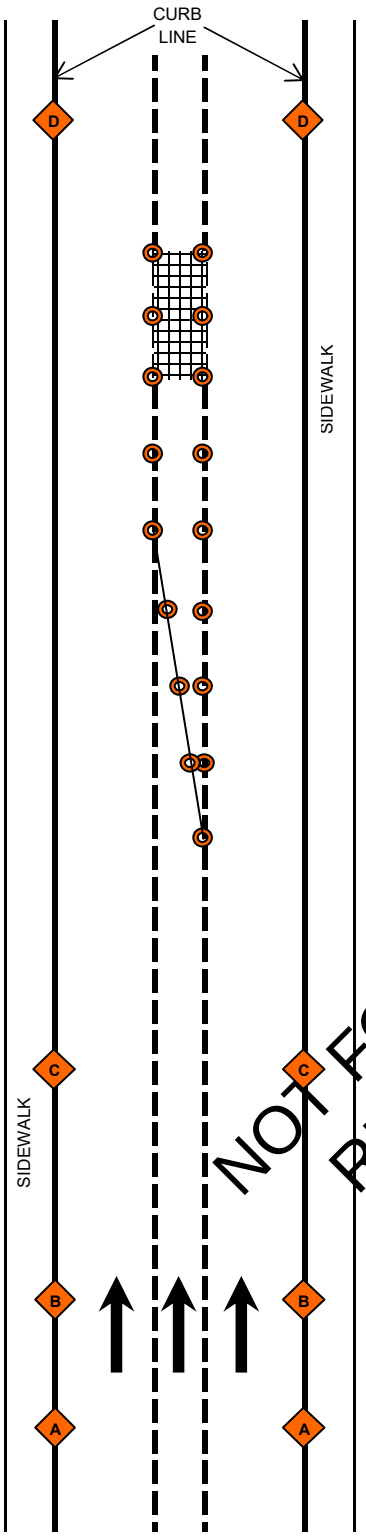
Table 6H-4. Formulas for Determining Taper Length

Speed (S)	Taper Length (L) in feet
40 mph or less	$L = \frac{WS^2}{60}$
45 mph or more	$L = WS$

Where: L = taper length in feet
W = width of offset in feet
S = posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

Plan #16A

WORK IN CENTER LANE - ONE WAY STREET
PLAN 16B



DRUM/CONE SPACING: 25 FT

50 FT TERMINATION AREA

WORK ZONE

50 FT BUFFER AREA

125 FT TAPER AREA

100 FT

100 FT

50 FT

	QTY	SIGN	SIZE	MUTCD	CDOT*
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	CENTER LANE CLOSED	30X30"	W9-3	
C	2	CNTR LA CLSD (SYM)	30X30"	W9-3a	
D	2	END ROAD WORK	48X24"	G20-2A	80-9612

* CDOT catalogue numbers are for reference only
Sizes may vary

City of New Haven
Dept. of Trans., Traf. &
Parking
PLAN 16 B

Min. 40" Traffic drum or tubular cone

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

NTS
8/23/2010

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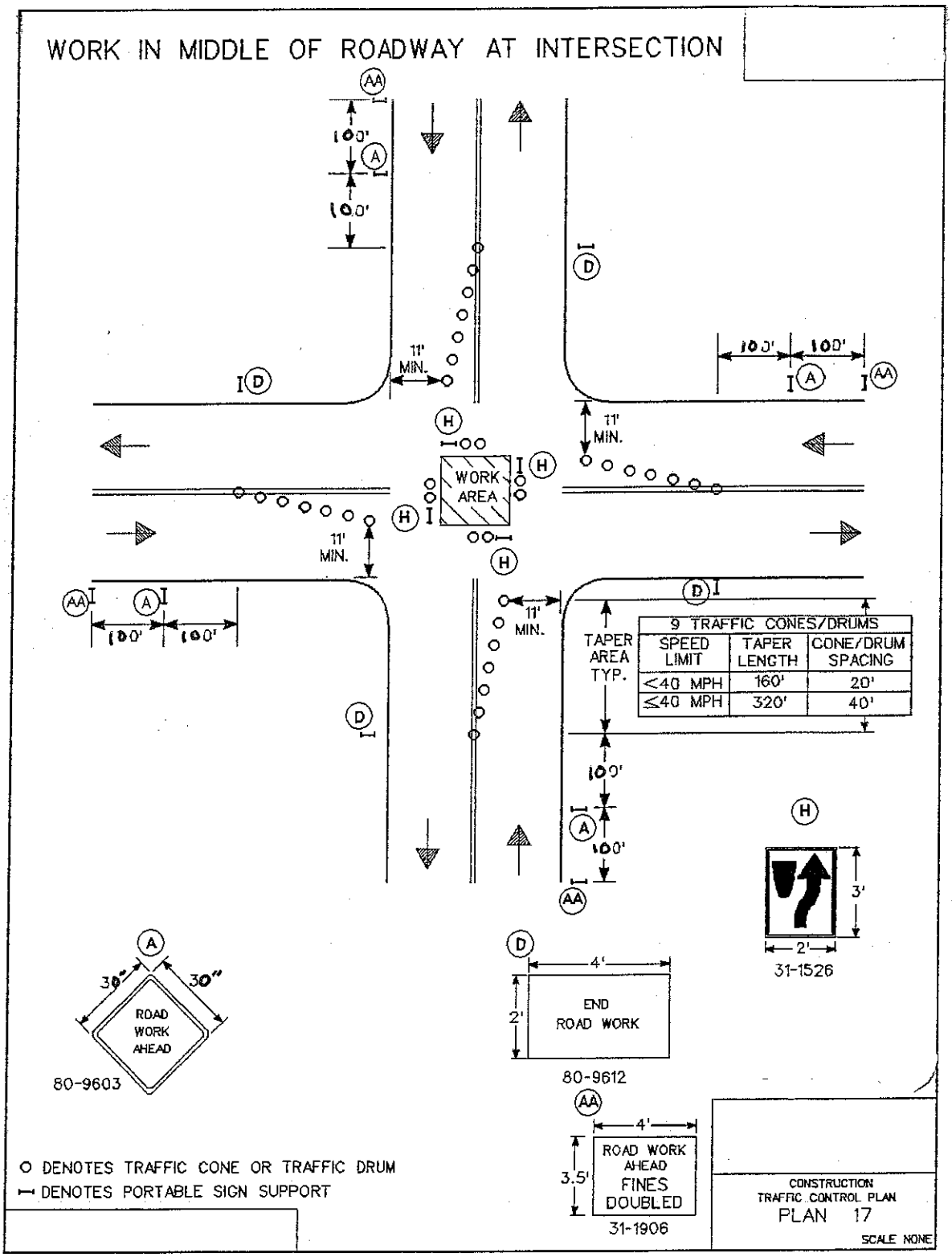
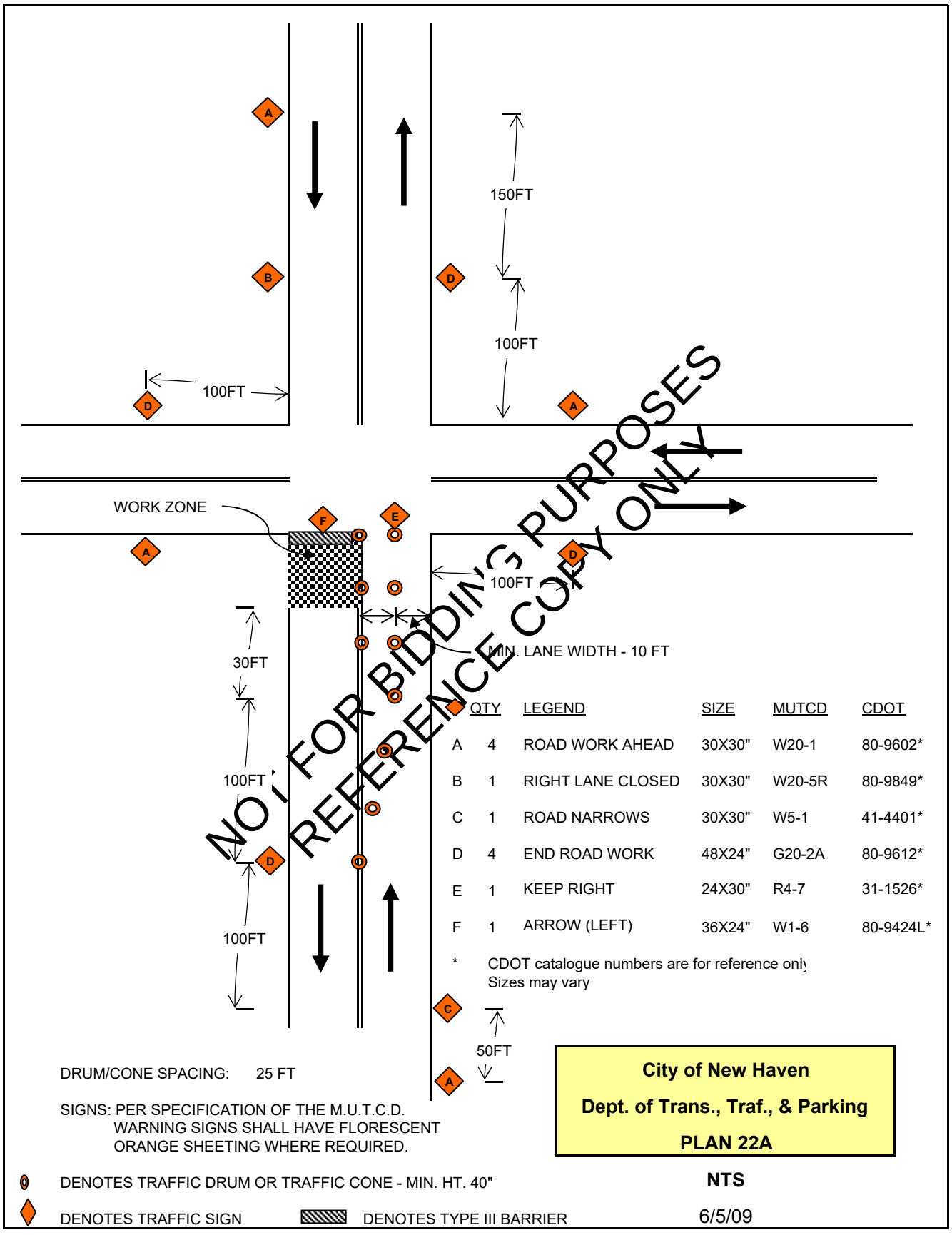


ITEM #971001A

WORK AT FAR SIDE OF INTERSECTION
-INTERSECTION OF TWO WAY STREETS-



	QTY	LEGEND	SIZE	MUTCD	CDOT
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602*
B	1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849*
C	1	ROAD NARROWS	30X30"	W5-1	41-4401*
D	4	END ROAD WORK	48X24"	G20-2A	80-9612*
E	1	KEEP RIGHT	24X30"	R4-7	31-1526*
F	1	ARROW (LEFT)	36X24"	W1-6	80-9424L*

* CDOT catalogue numbers are for reference only
Sizes may vary

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

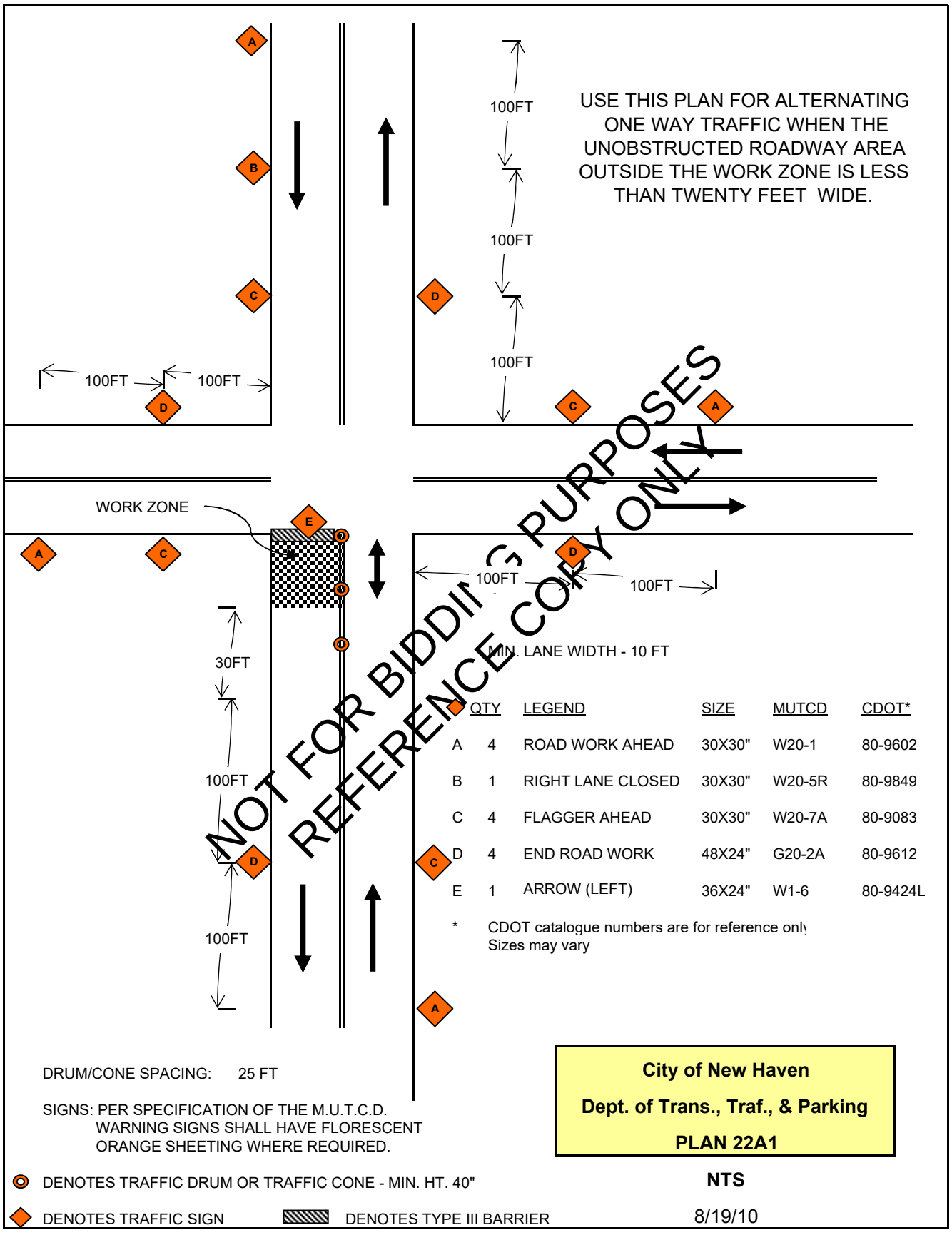
Dept. of Trans., Traf., & Parking

PLAN 22A

NTS

6/5/09

WORK AT FAR SIDE OF INTERSECTION
-INTERSECTION OF TWO WAY STREETS-



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	4	FLAGGER AHEAD	30X30"	W20-7A	80-9083
D	4	END ROAD WORK	48X24"	G20-2A	80-9612
E	1	ARROW (LEFT)	36X24"	W1-6	80-9424L

* CDOT catalogue numbers are for reference only
Sizes may vary

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

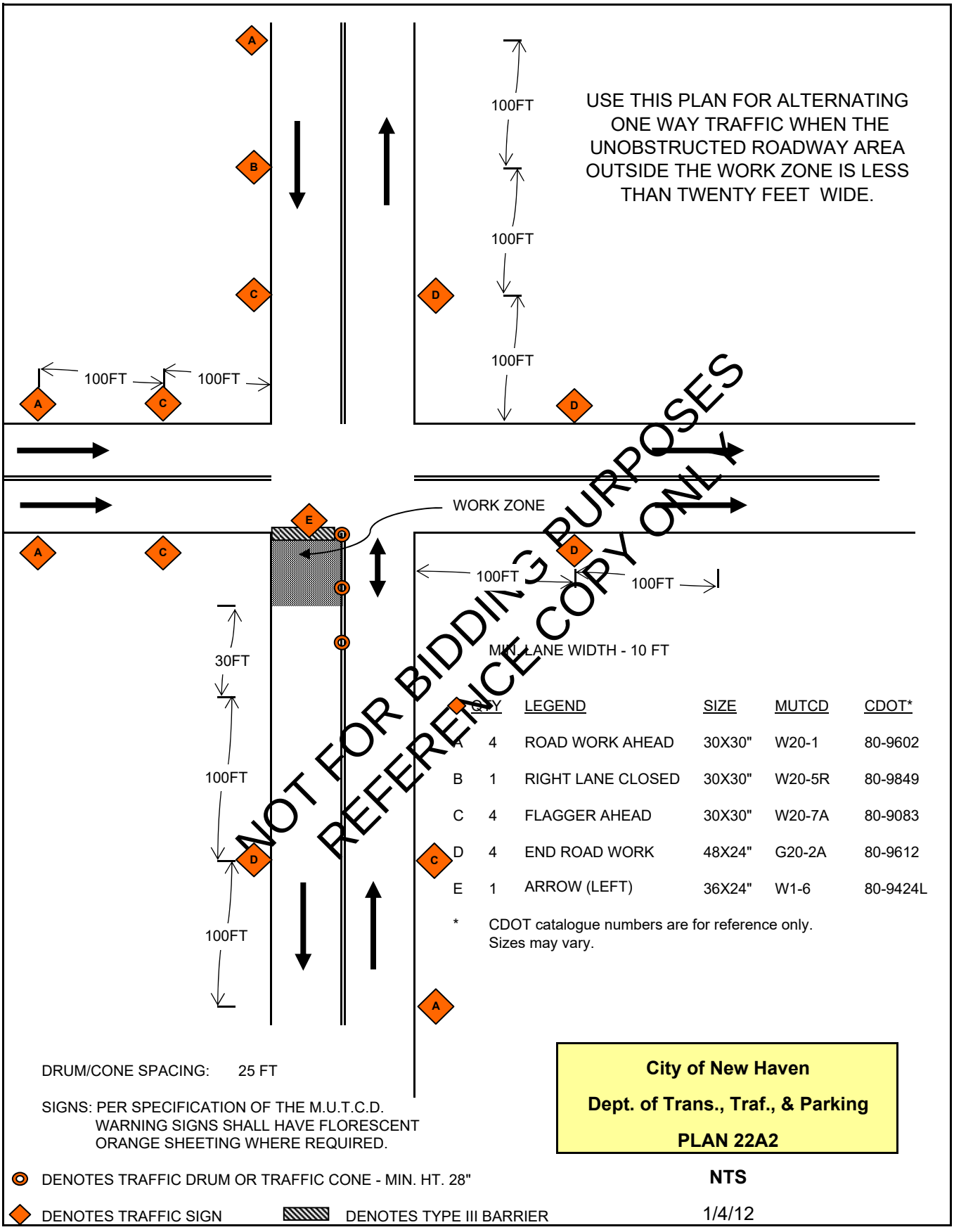
PLAN 22A1

NTS

8/19/10

WORK AT FAR SIDE OF INTERSECTION
-INTERSECTION OF A TWO WAY AND A ONE WAY STREET-

Plan 22A2



USE THIS PLAN FOR ALTERNATING ONE WAY TRAFFIC WHEN THE UNOBSTRUCTED ROADWAY AREA OUTSIDE THE WORK ZONE IS LESS THAN TWENTY FEET WIDE.

MIN. LANE WIDTH - 10 FT

	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	4	FLAGGER AHEAD	30X30"	W20-7A	80-9083
D	4	END ROAD WORK	48X24"	G20-2A	80-9612
E	1	ARROW (LEFT)	36X24"	W1-6	80-9424L

* CDOT catalogue numbers are for reference only. Sizes may vary.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D. WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

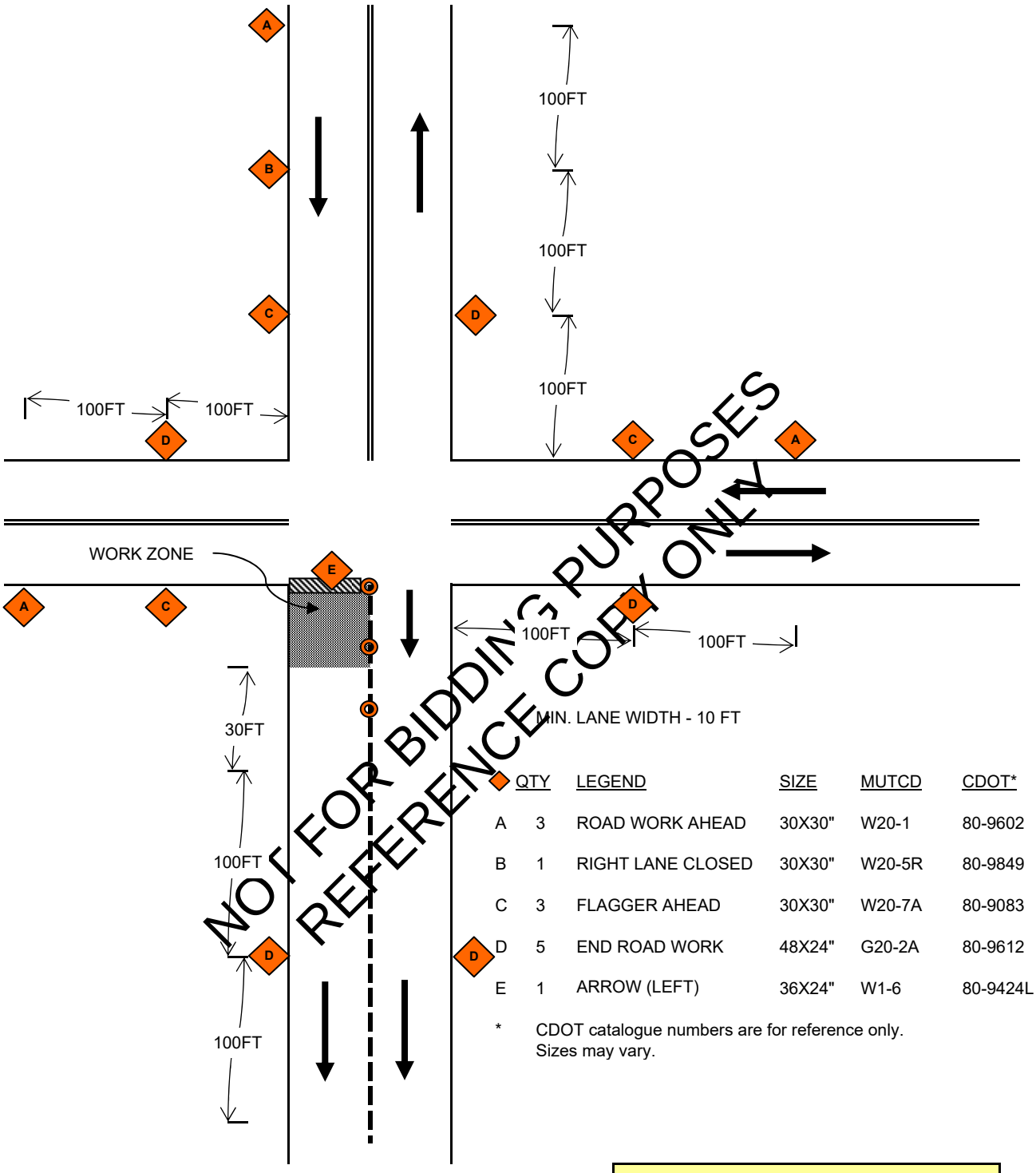
Dept. of Trans., Traf., & Parking

PLAN 22A2

NTS

1/4/12

WORK AT FAR SIDE OF INTERSECTION
-INTERSECTION OF TWO WAY/ONE WAY STREETS-



MIN. LANE WIDTH - 10 FT

	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	3	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	3	FLAGGER AHEAD	30X30"	W20-7A	80-9083
D	5	END ROAD WORK	48X24"	G20-2A	80-9612
E	1	ARROW (LEFT)	36X24"	W1-6	80-9424L

* CDOT catalogue numbers are for reference only. Sizes may vary.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

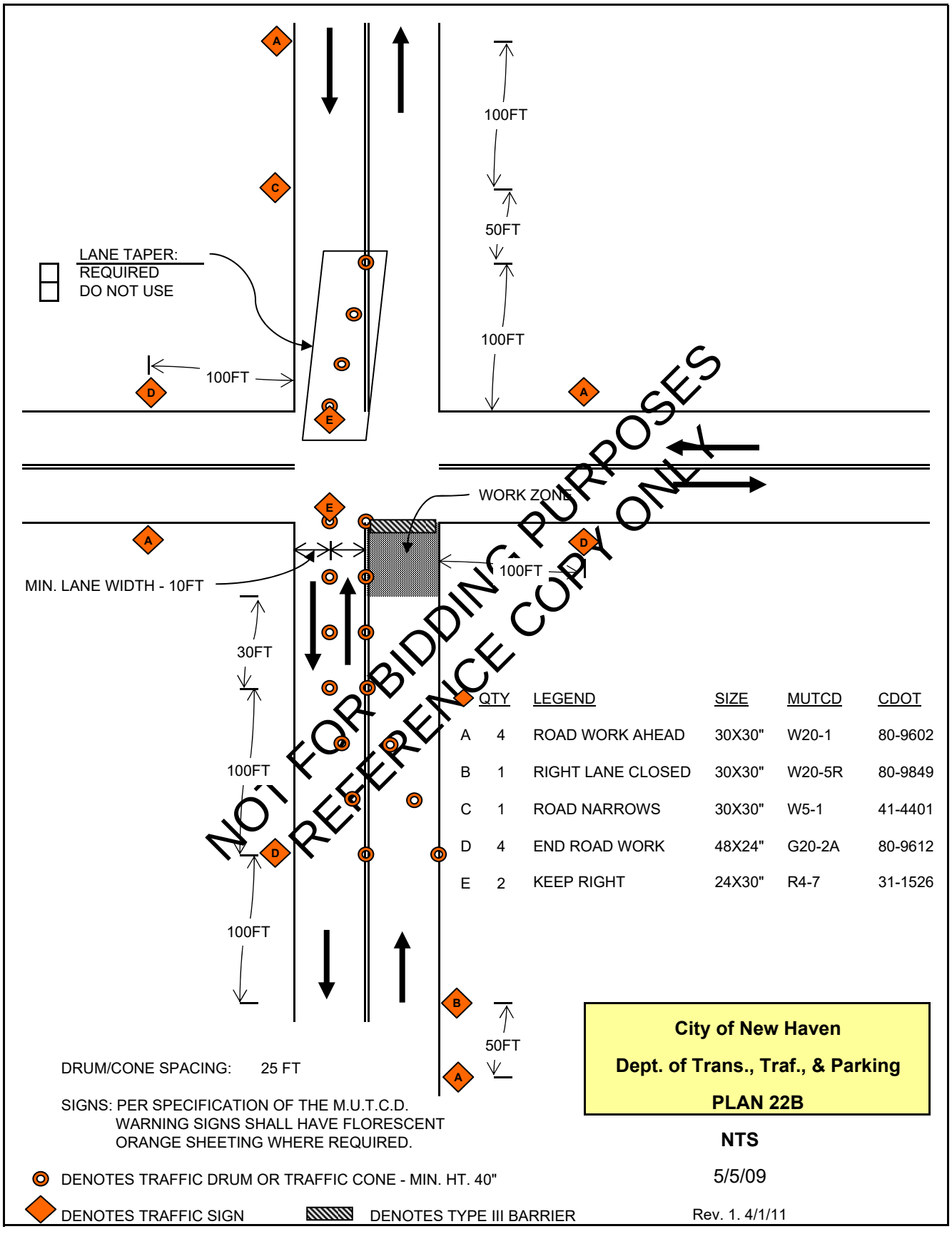
Dept. of Trans., Traf., & Parking

PLAN 22A3

NTS

2/5/13

WORK AT NEAR SIDE OF INTERSECTION
-INTERSECTION OF TWO WAY STREETS-



	QTY	LEGEND	SIZE	MUTCD	CDOT
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	1	ROAD NARROWS	30X30"	W5-1	41-4401
D	4	END ROAD WORK	48X24"	G20-2A	80-9612
E	2	KEEP RIGHT	24X30"	R4-7	31-1526

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 22B

NTS

5/5/09

Rev. 1. 4/1/11

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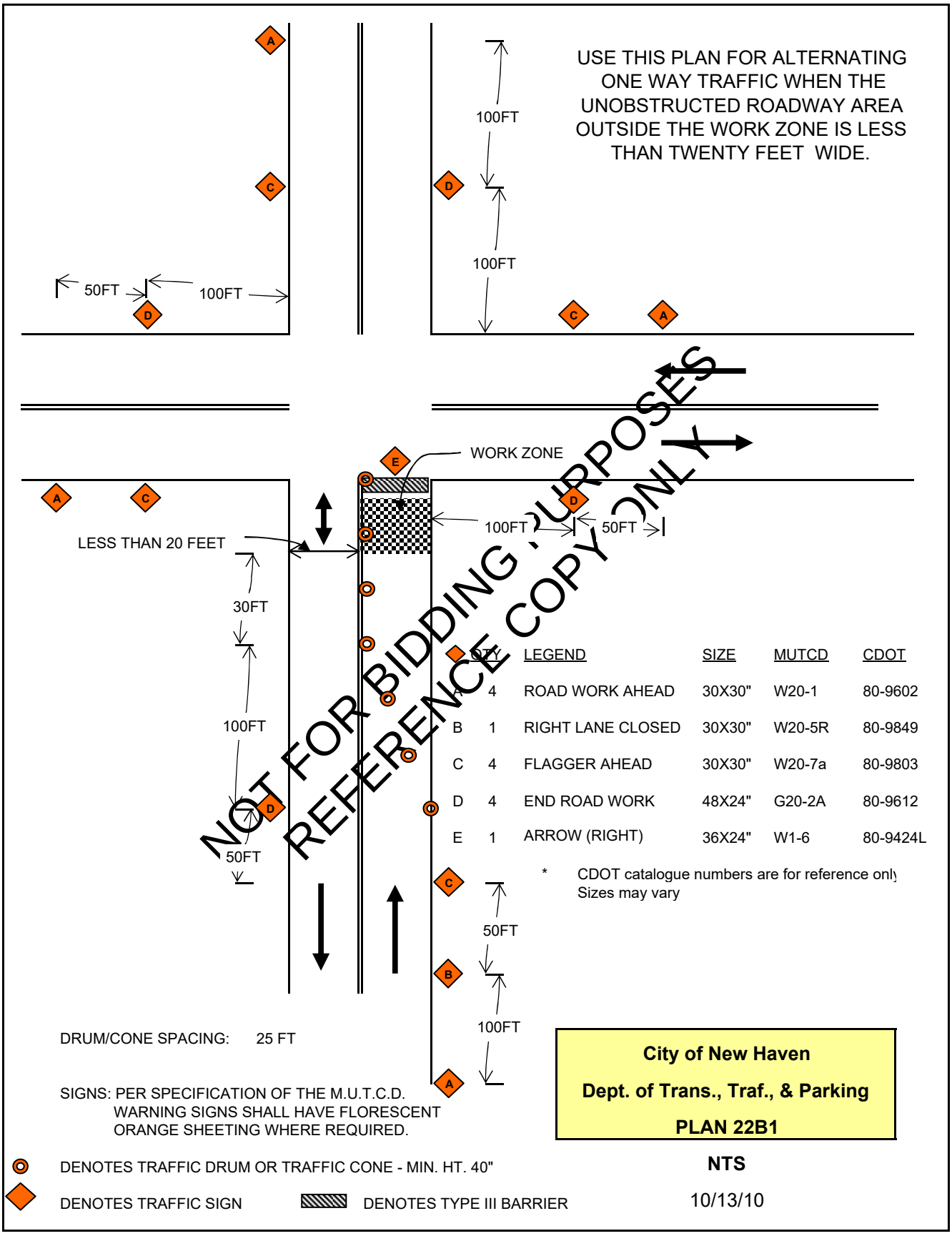
WORK AT INTERSECTION IN RIGHT LANE
-INTERSECTION OF TWO WAY STREETS-



QTY	LEGEND	SIZE	MUTCD	CDOT
A 4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B 1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C 4	FLAGGER AHEAD	30X30"	W20-7a	80-9803
D 4	END ROAD WORK	48X24"	G20-2A	80-9612
E 1	ARROW (RIGHT)	36X24"	W1-6	80-9424L

* CDOT catalogue numbers are for reference only
Sizes may vary

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 22B1

NTS

10/13/10

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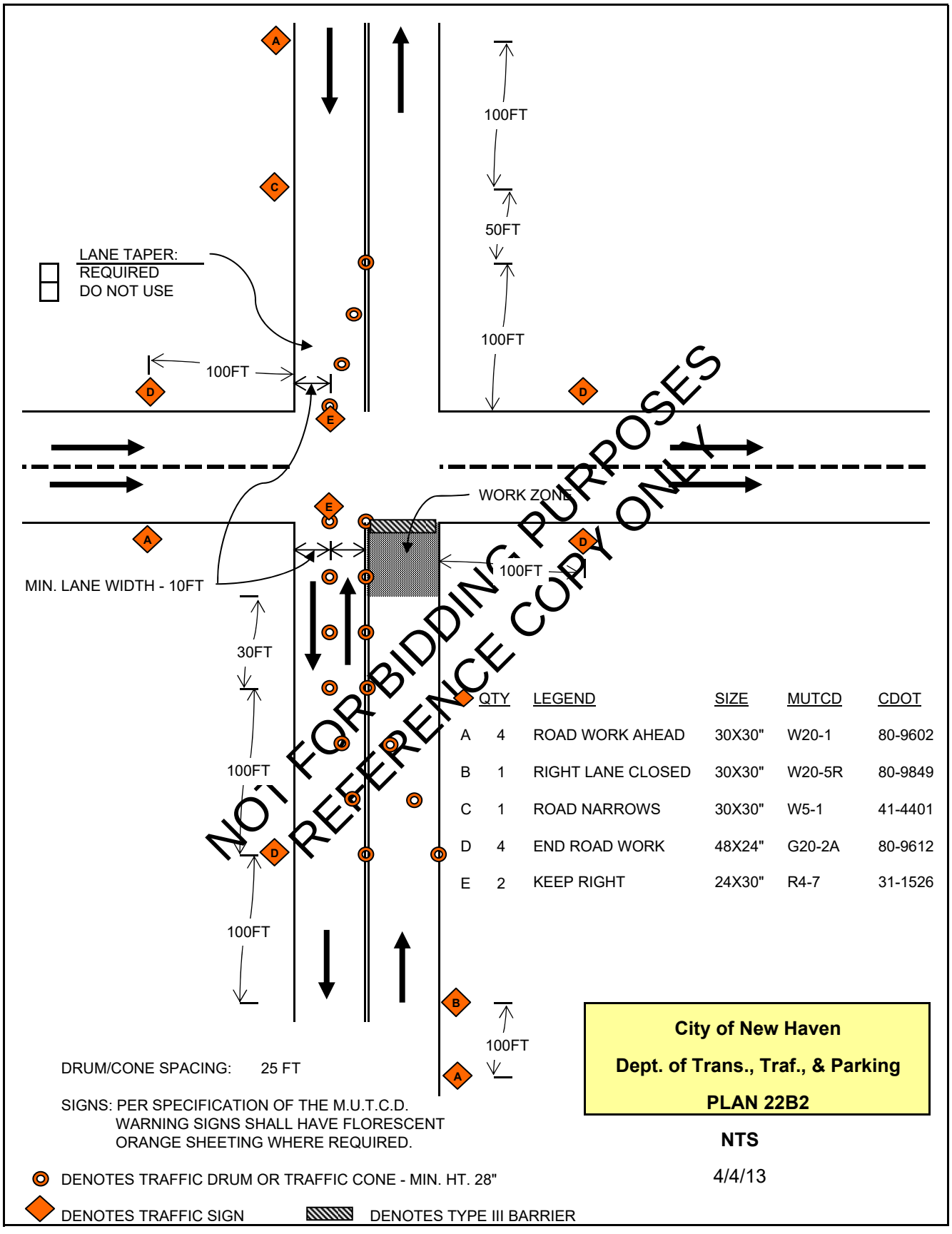
WORK AT NEAR SIDE OF INTERSECTION
-INTERSECTION OF A ONE WAY AND A TWO WAY STREET-



	QTY	LEGEND	SIZE	MUTCD	CDOT
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	1	ROAD NARROWS	30X30"	W5-1	41-4401
D	4	END ROAD WORK	48X24"	G20-2A	80-9612
E	2	KEEP RIGHT	24X30"	R4-7	31-1526

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 22B2

NTS

4/4/13

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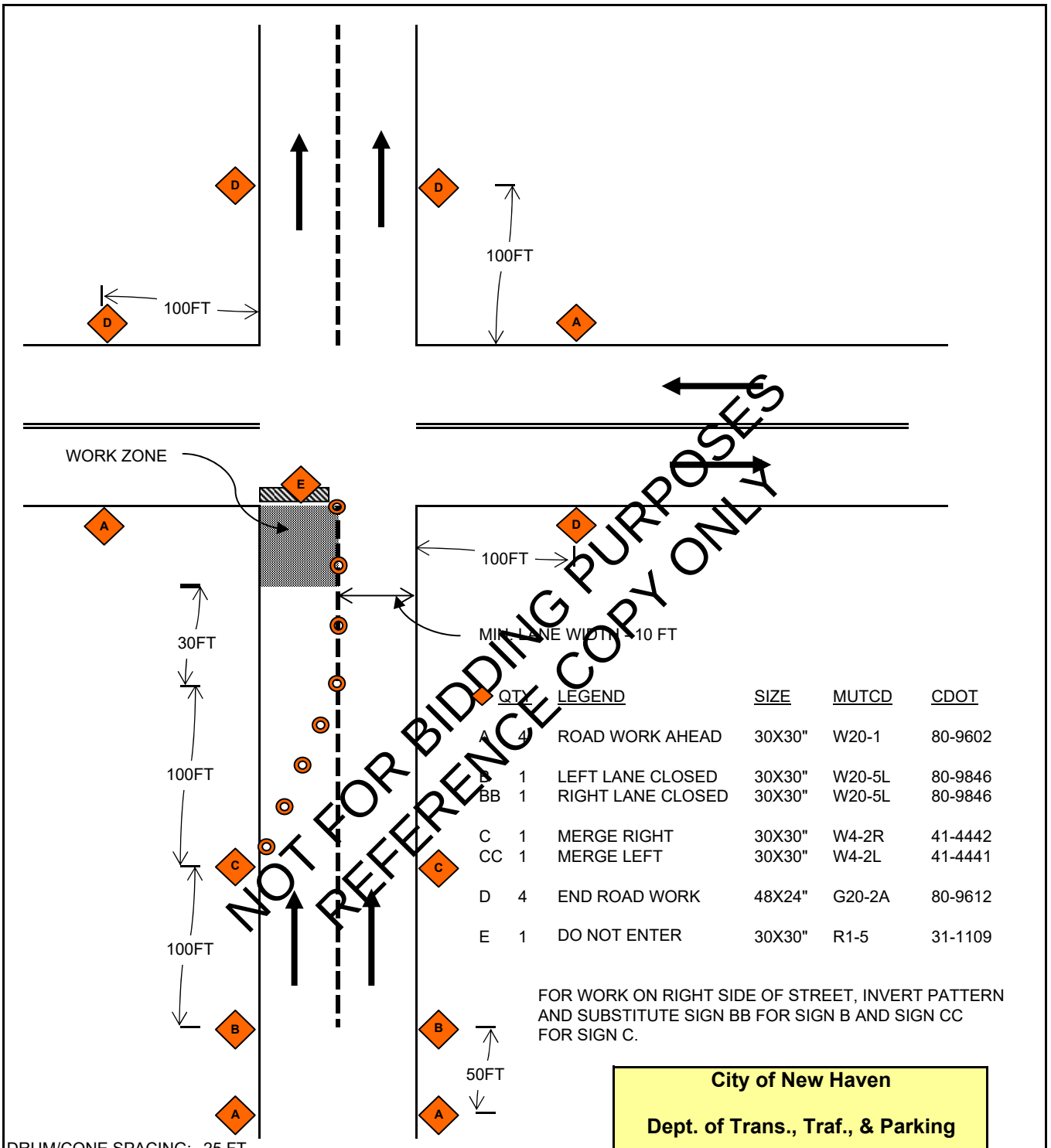
WORK AT NEAR SIDE OF INTERSECTION
-INTERSECTION OF A ONE WAY AND A TWO WAY STREET-



QTY	LEGEND	SIZE	MUTCD	CDOT
4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
1	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
1	RIGHT LANE CLOSED	30X30"	W20-5L	80-9846
1	MERGE RIGHT	30X30"	W4-2R	41-4442
1	MERGE LEFT	30X30"	W4-2L	41-4441
4	END ROAD WORK	48X24"	G20-2A	80-9612
1	DO NOT ENTER	30X30"	R1-5	31-1109

FOR WORK ON RIGHT SIDE OF STREET, INVERT PATTERN AND SUBSTITUTE SIGN BB FOR SIGN B AND SIGN CC FOR SIGN C.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

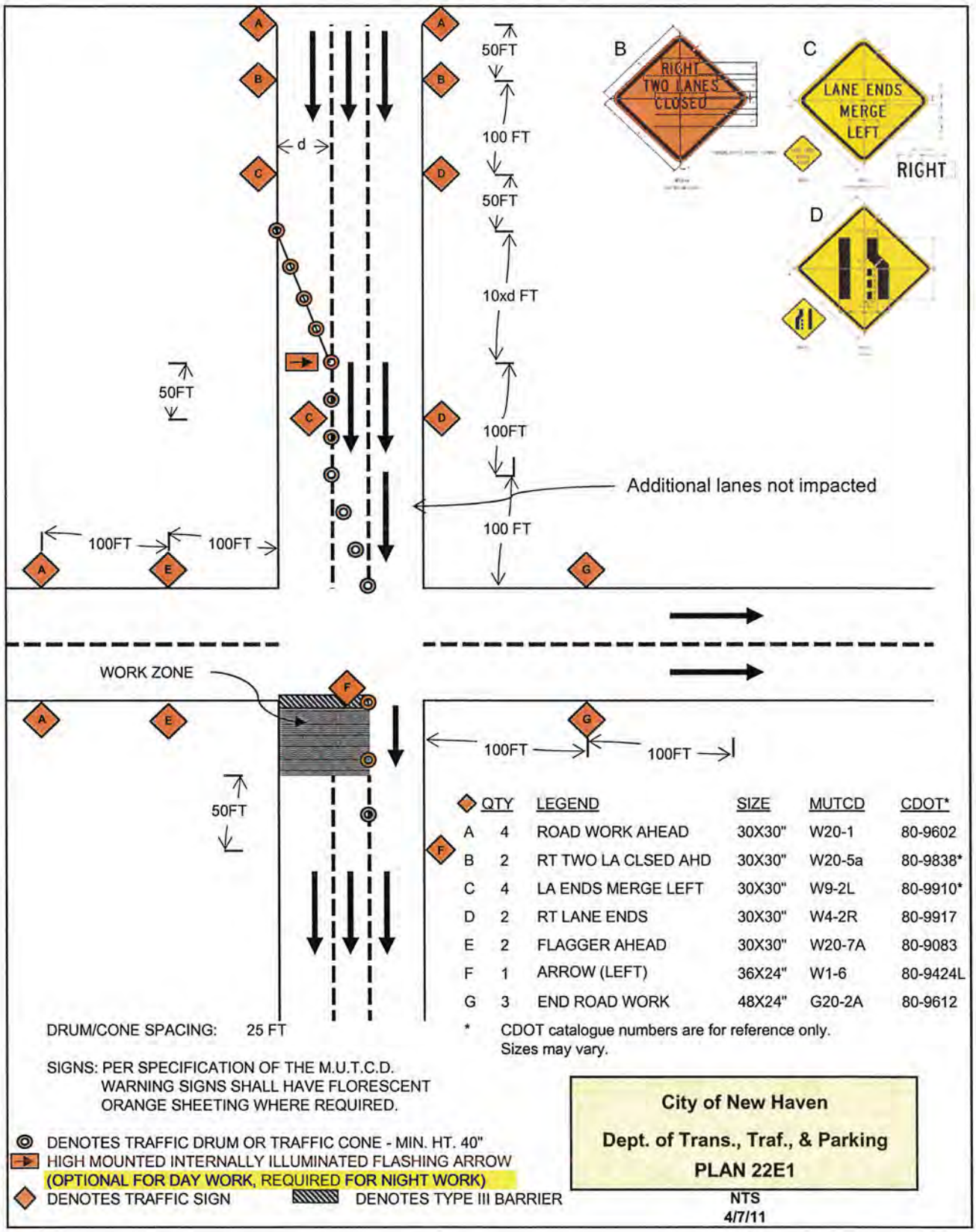
PLAN 22C

NTS
3/9/10

Rev. 1. 3/20/12

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 22C

WORK AT FAR SIDE OF INTERSECTION
-INTERSECTION OF ONE WAY STREETS-
TWO LANE MERGE



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	RT TWO LA CLSED AHD	30X30"	W20-5a	80-9838*
C	4	LA ENDS MERGE LEFT	30X30"	W9-2L	80-9910*
D	2	RT LANE ENDS	30X30"	W4-2R	80-9917
E	2	FLAGGER AHEAD	30X30"	W20-7A	80-9083
F	1	ARROW (LEFT)	36X24"	W1-6	80-9424L
G	3	END ROAD WORK	48X24"	G20-2A	80-9612

* CDOT catalogue numbers are for reference only. Sizes may vary.

DRUM/CONE SPACING: 25 FT

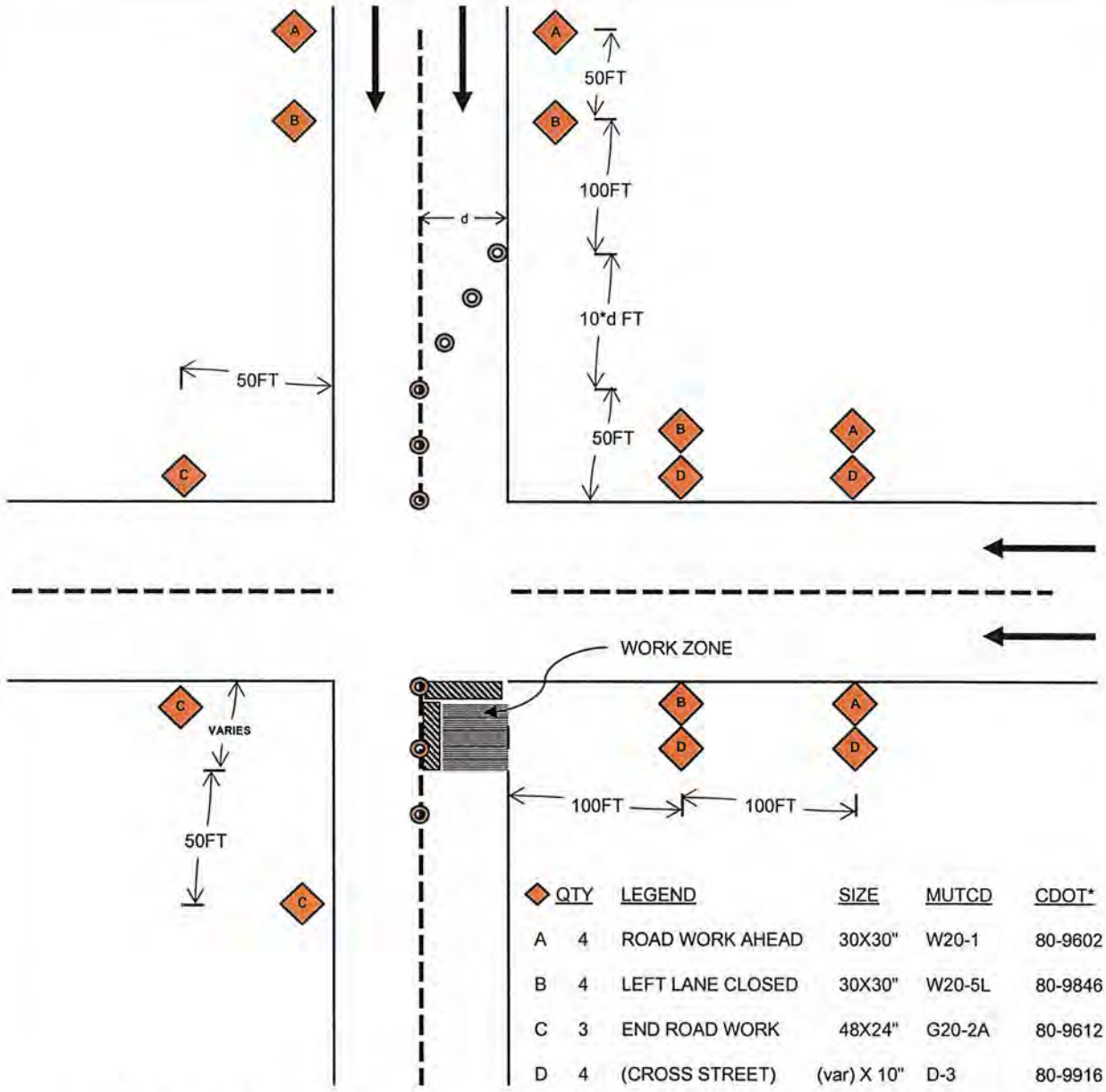
SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
(OPTIONAL FOR DAY WORK, REQUIRED FOR NIGHT WORK)
DENOTES TRAFFIC SIGN
DENOTES TYPE III BARRIER

City of New Haven
Dept. of Trans., Traf., & Parking
PLAN 22E1
NTS
4/7/11

WORK AT FAR SIDE OF INTERSECTION
- INTERSECTION OF TWO ONE WAY STREETS -

PLAN 22F



QTY		LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	4	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
C	3	END ROAD WORK	48X24"	G20-2A	80-9612
D	4	(CROSS STREET)	(var) X 10"	D-3	80-9916

DRUM/CONE SPACING: 25 FT (APPROX)

* CDOT catalogue numbers are for reference only. Sizes may vary.

SIGNS: ALL ORANGE SIGNS INDICATED ABOVE SHALL HAVE FLOURESCENT SHEETING

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

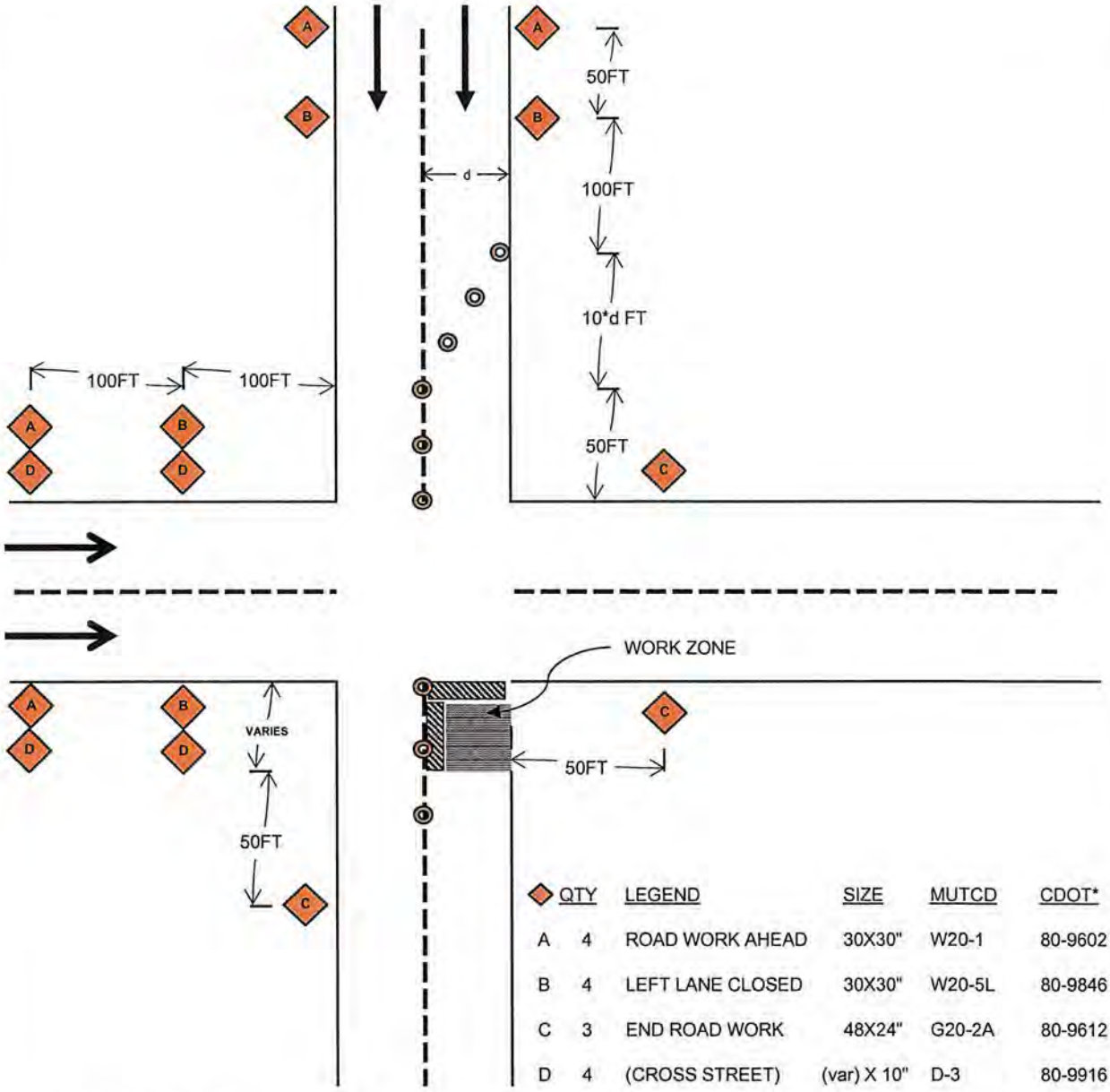
PLAN 22F

NTS
6/8/11
Rev. 1. 1/9/12

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 22F

WORK AT FAR SIDE OF INTERSECTION
- INTERSECTION OF TWO ONE WAY STREETS -

PLAN 22F1



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	4	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
C	3	END ROAD WORK	48X24"	G20-2A	80-9612
D	4	(CROSS STREET)	(var) X 10"	D-3	80-9916

DRUM/CONE SPACING: 25 FT (APPROX)

* CDOT catalogue numbers are for reference only. Sizes may vary.

SIGNS: ALL ORANGE SIGNS INDICATED ABOVE SHALL HAVE FLOURESCENT SHEETING

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

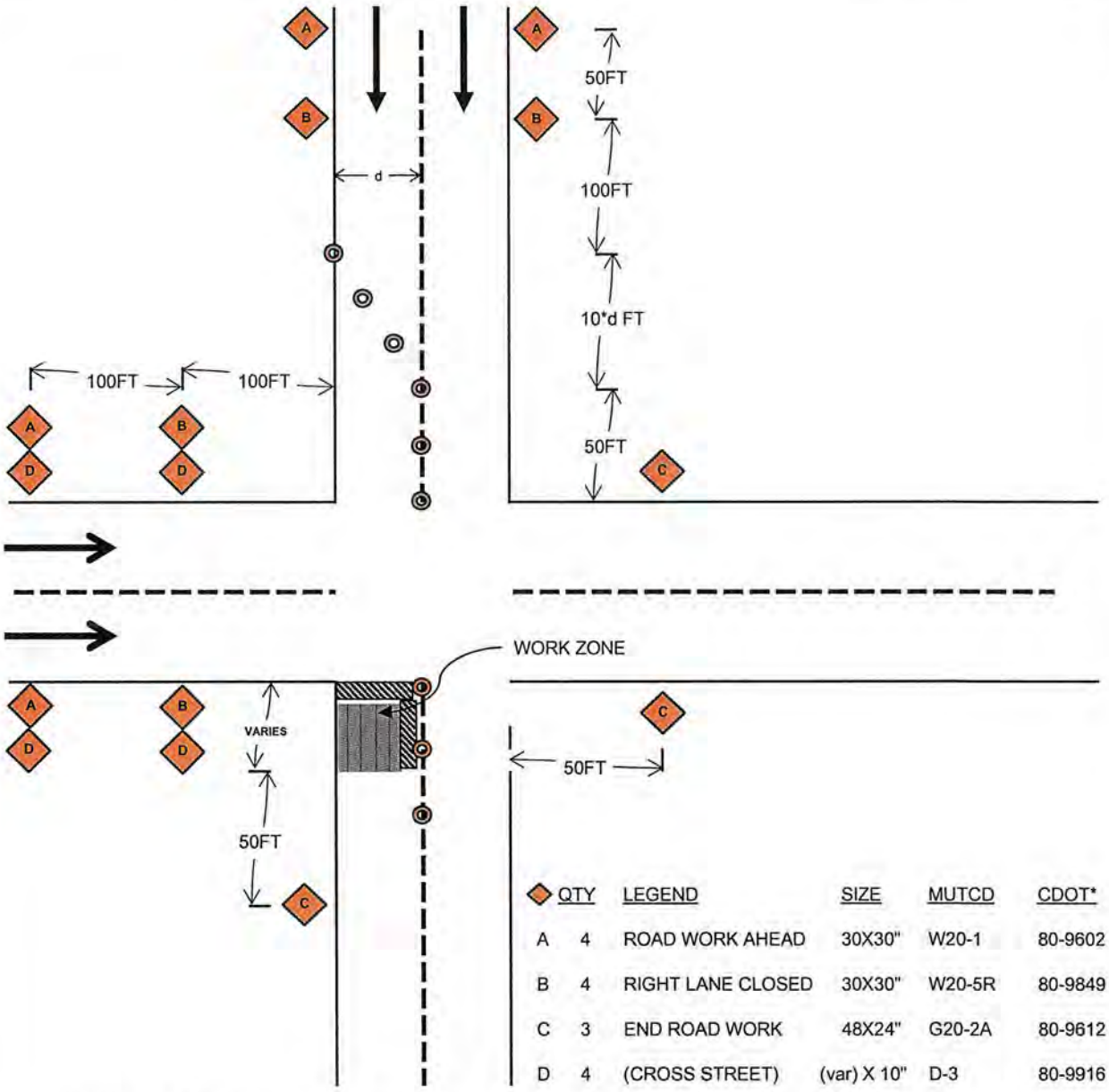
PLAN 22F1

NTS
6/8/11
Rev. 1. 1/9/12

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 22F1

WORK AT FAR SIDE OF INTERSECTION
- INTERSECTION OF TWO ONE WAY STREETS -

PLAN 22F1(R)



QTY		LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	4	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	3	END ROAD WORK	48X24"	G20-2A	80-9612
D	4	(CROSS STREET)	(var) X 10"	D-3	80-9916

DRUM/CONE SPACING: 25 FT (APPROX)

SIGNS: ALL ORANGE SIGNS INDICATED ABOVE SHALL HAVE FLOURESCENT SHEETING

* CDOT catalogue numbers are for reference only. Sizes may vary.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

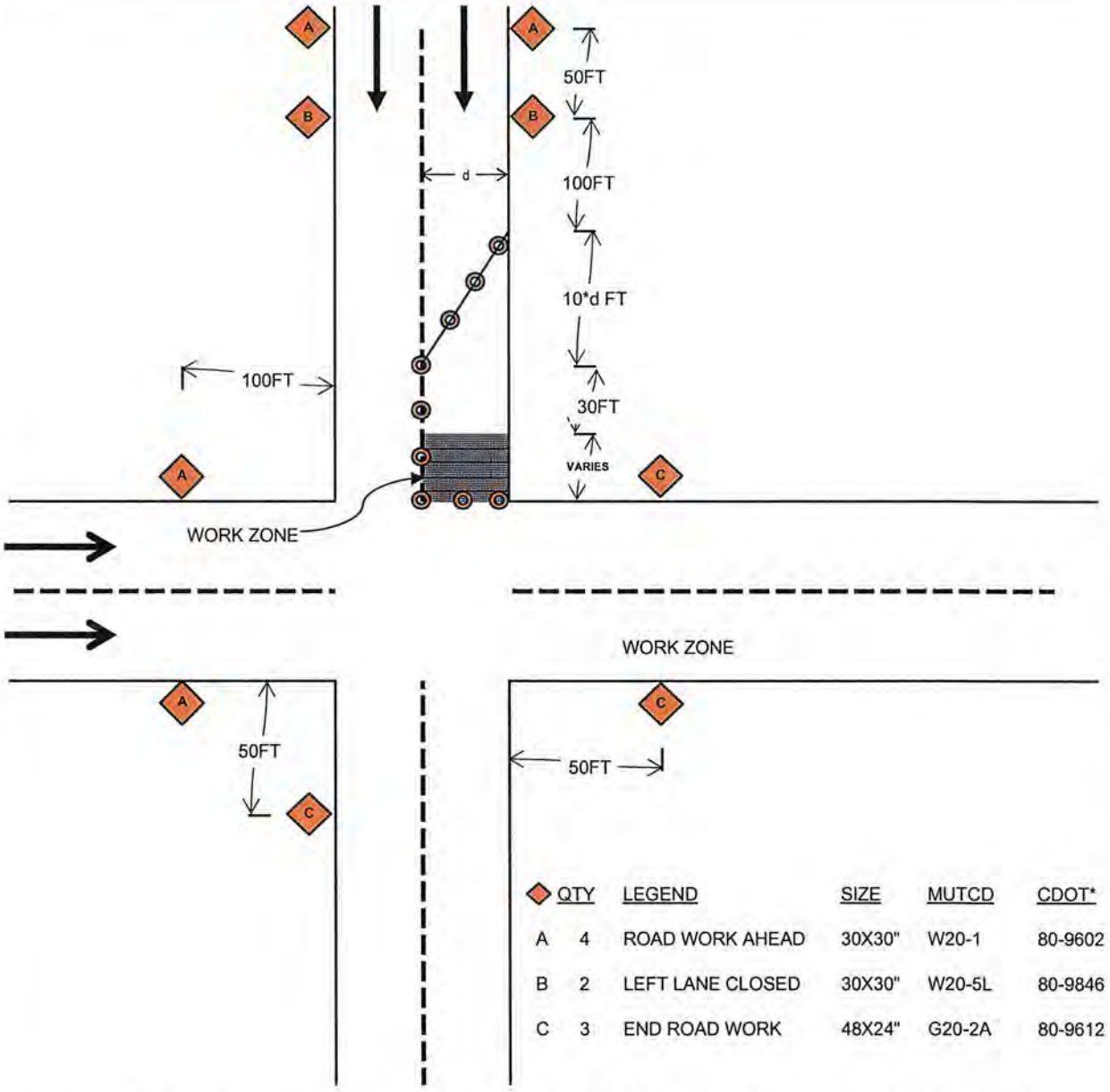
PLAN 22F1 (R)

NTS
4/16/12

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 22F1R

WORK AT NEAR SIDE OF INTERSECTION
- INTERSECTION OF TWO ONE WAY STREETS -

Plan 22F2



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
C	3	END ROAD WORK	48X24"	G20-2A	80-9612

DRUM/CONE SPACING: 25 FT (APPROX)

SIGNS: ALL ORANGE SIGNS INDICATED ABOVE SHALL HAVE FLOURESCENT SHEETING

* CDOT catalogue numbers are for reference only. Sizes may vary.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 22F2

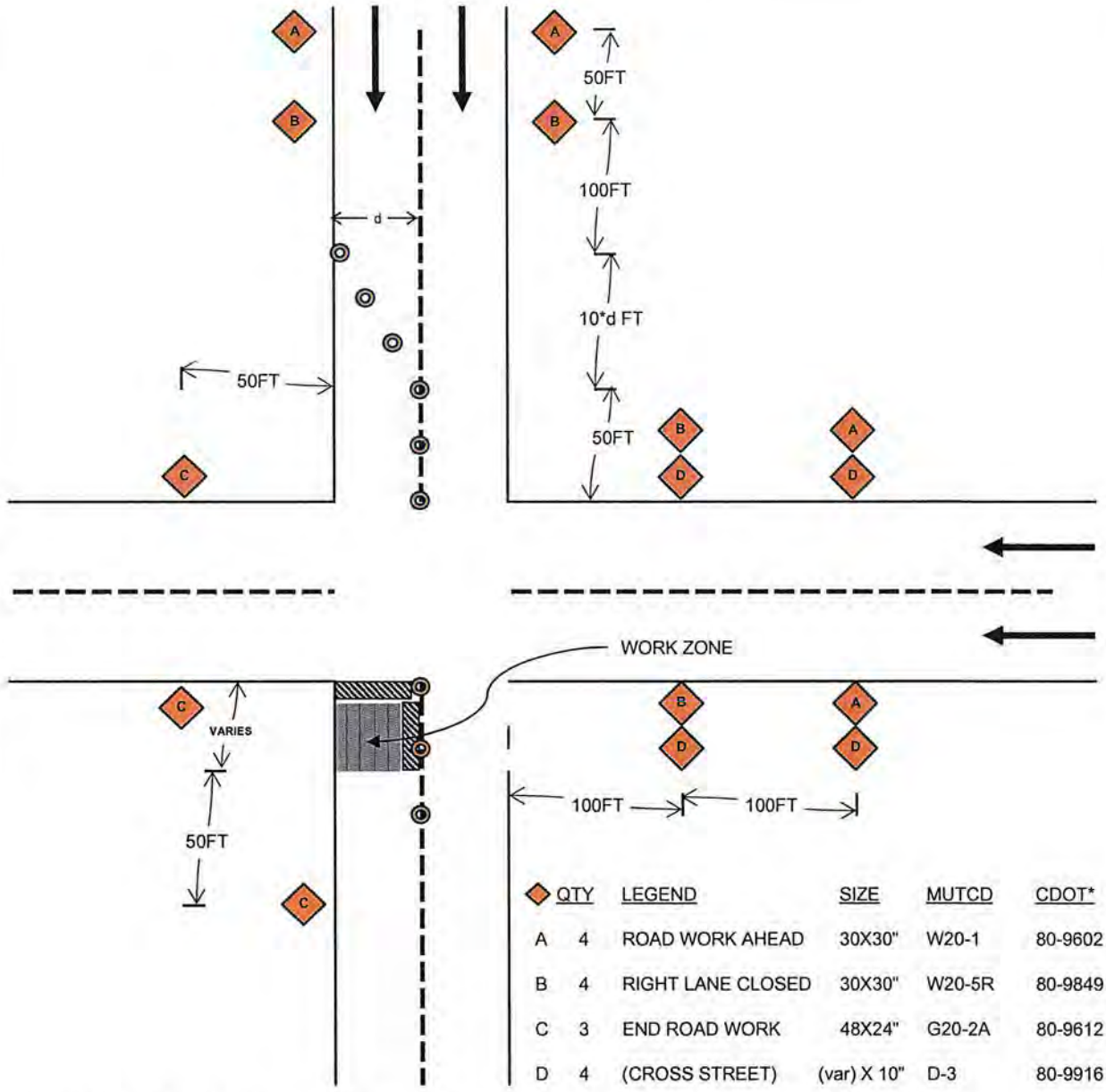
NTS

1/9/12

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 22F2

WORK AT FAR SIDE OF INTERSECTION
- INTERSECTION OF TWO ONE WAY STREETS -

PLAN 22G



QTY		LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	4	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	3	END ROAD WORK	48X24"	G20-2A	80-9612
D	4	(CROSS STREET)	(var) X 10"	D-3	80-9916

DRUM/CONE SPACING: 25 FT (APPROX)

* CDOT catalogue numbers are for reference only. Sizes may vary.

SIGNS: ALL ORANGE SIGNS INDICATED ABOVE SHALL HAVE FLOURESCENT SHEETING

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

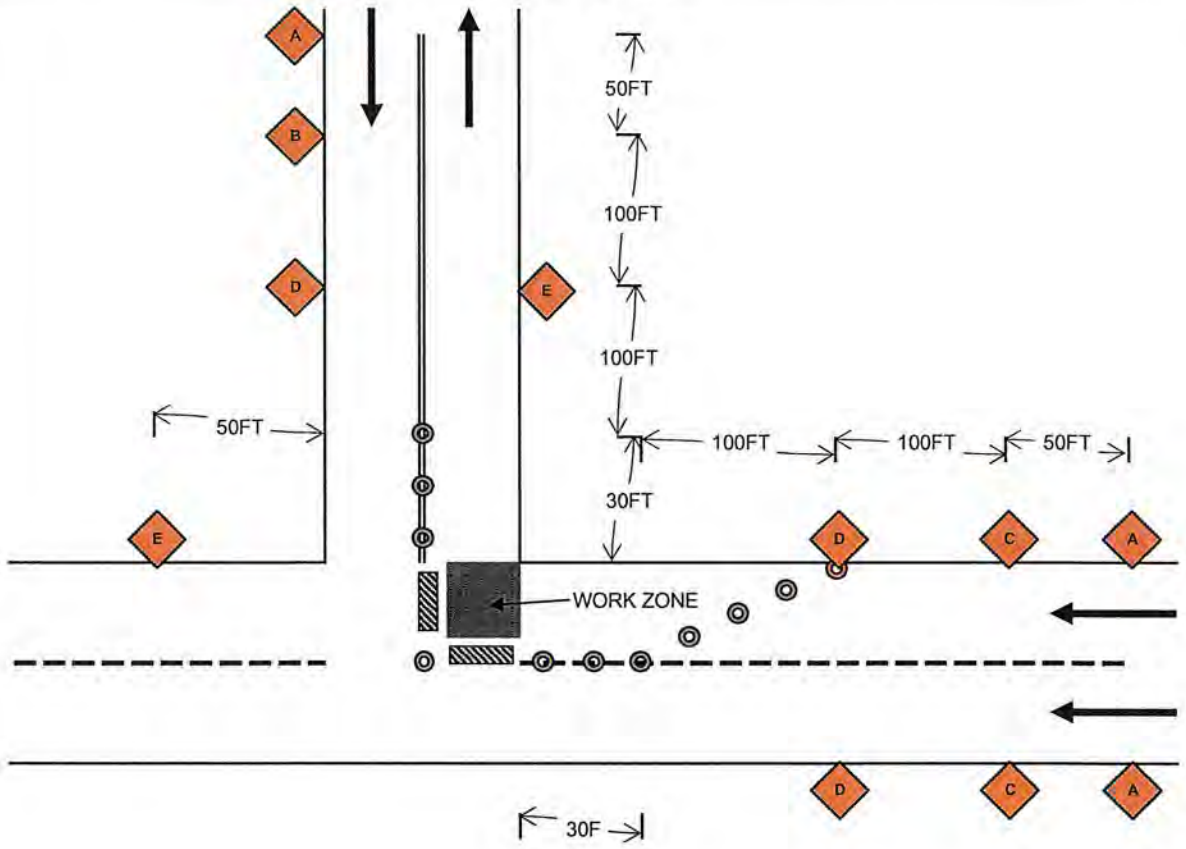
Dept. of Trans., Traf., & Parking

PLAN 22G

NTS
10/29/13

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 22G

WORK AT A T INTERSECTION
OF ONE WAY AND TWO WAY STREETS
PLAN 26G1



	QTY	LEGEND	SIZE	MUTCD	CDOT
A	3	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	ONE LANE ROAD AHD	36X36"	W20-4	80-9834
C	2	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
D	3	FLAGGER AHEAD	36X36"	W20-7a	80-9603
E	2	END ROAD WORK	48X24"	G20-2A	80-9612

* CDOT catalogue numbers are for reference only. Sizes may vary.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D. WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

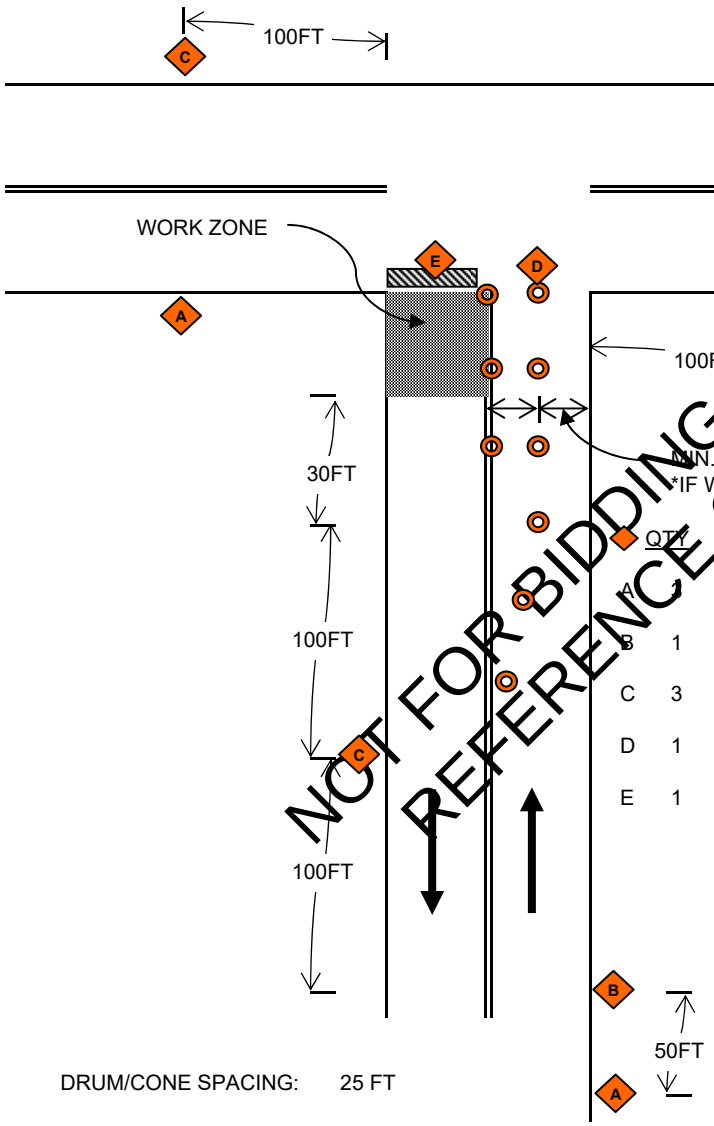
PLAN 26G1

NTS

5/28/14

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 26G1

WORK AT T INTERSECTION - LEFT LANE
-INTERSECTION OF TWO WAY STREETS-



MIN. LANE WIDTH - 10 FT*
*IF WIDTH IS LESS THAN 10'/LANE, USE PLAN 22A1

	QTY	LEGEND	SIZE	MUTCD	CDOT
A	1	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	ROAD NARROWS	30X30"	W5-1	41-4401
C	3	END ROAD WORK	48X24"	G20-2A	80-9612
D	1	KEEP RIGHT	24X30"	R4-7	31-1526
E	1	ARROW (LEFT)	36X24"	W1-6	80-9424L

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 24A

NTS

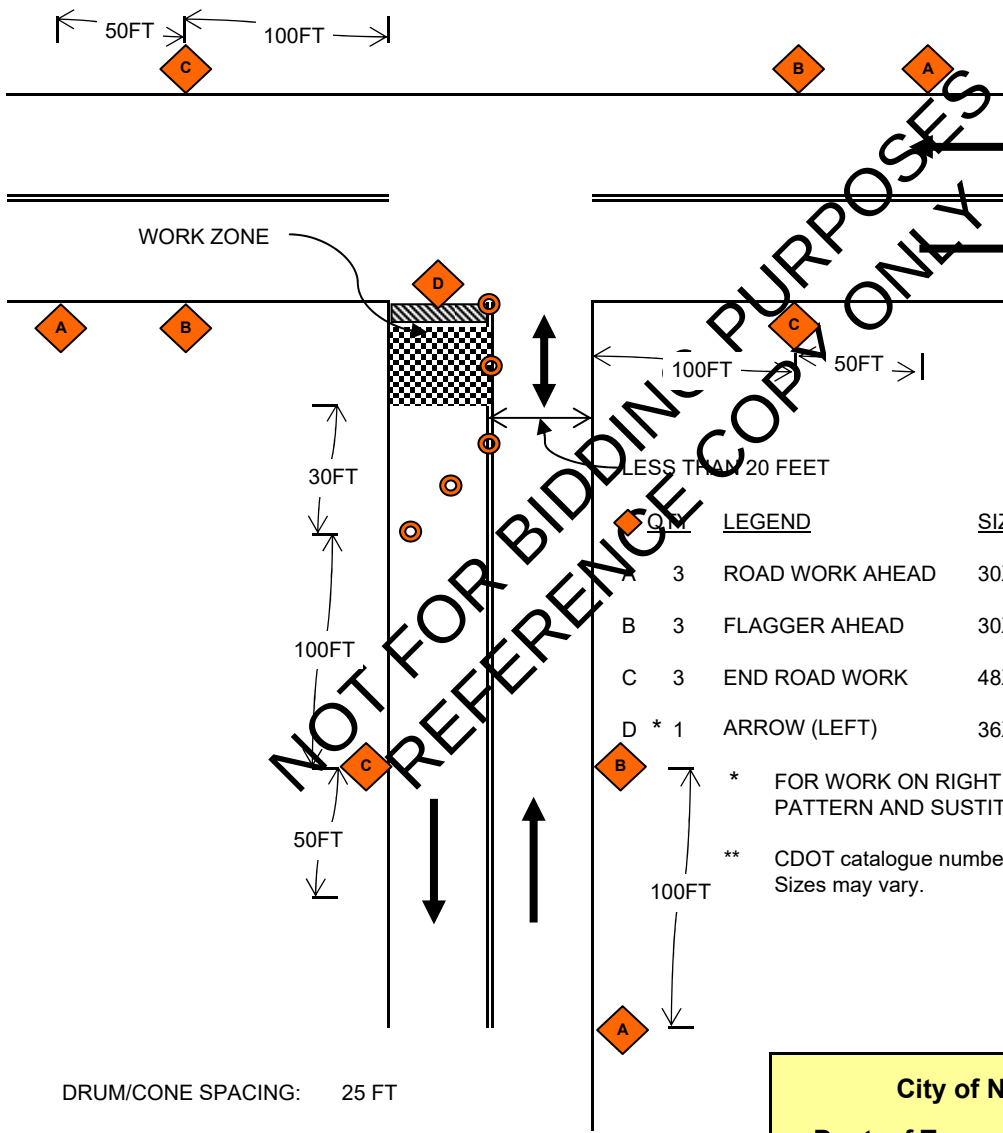
6/22/09

Rev. 1 5/18/12

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 24A

WORK AT INTERSECTION -
-T INTERSECTION OF TWO WAY STREETS-
PLAN 24A1

USE THIS PLAN FOR ALTERNATING ONE WAY TRAFFIC WHEN THE UNOBSTRUCTED ROADWAY AREA OUTSIDE THE WORK ZONE IS LESS THAN TWENTY FEET WIDE.



	QTY	LEGEND	SIZE	MUTCD	CDOT**
A	3	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	3	FLAGGER AHEAD	30X30"	W20-7a	80-9803
C	3	END ROAD WORK	48X24"	G20-2A	80-9612
D	* 1	ARROW (LEFT)	36X24"	W1-6	80-9424R

* FOR WORK ON RIGHT SIDE OF STREET, INVERT PATTERN AND SUSTITUTE A RIGHT ARROW FOR D

** CDOT catalogue numbers are for reference only. Sizes may vary.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

City of New Haven
Dept. of Trans., Traf., & Parking
PLAN 24A1

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

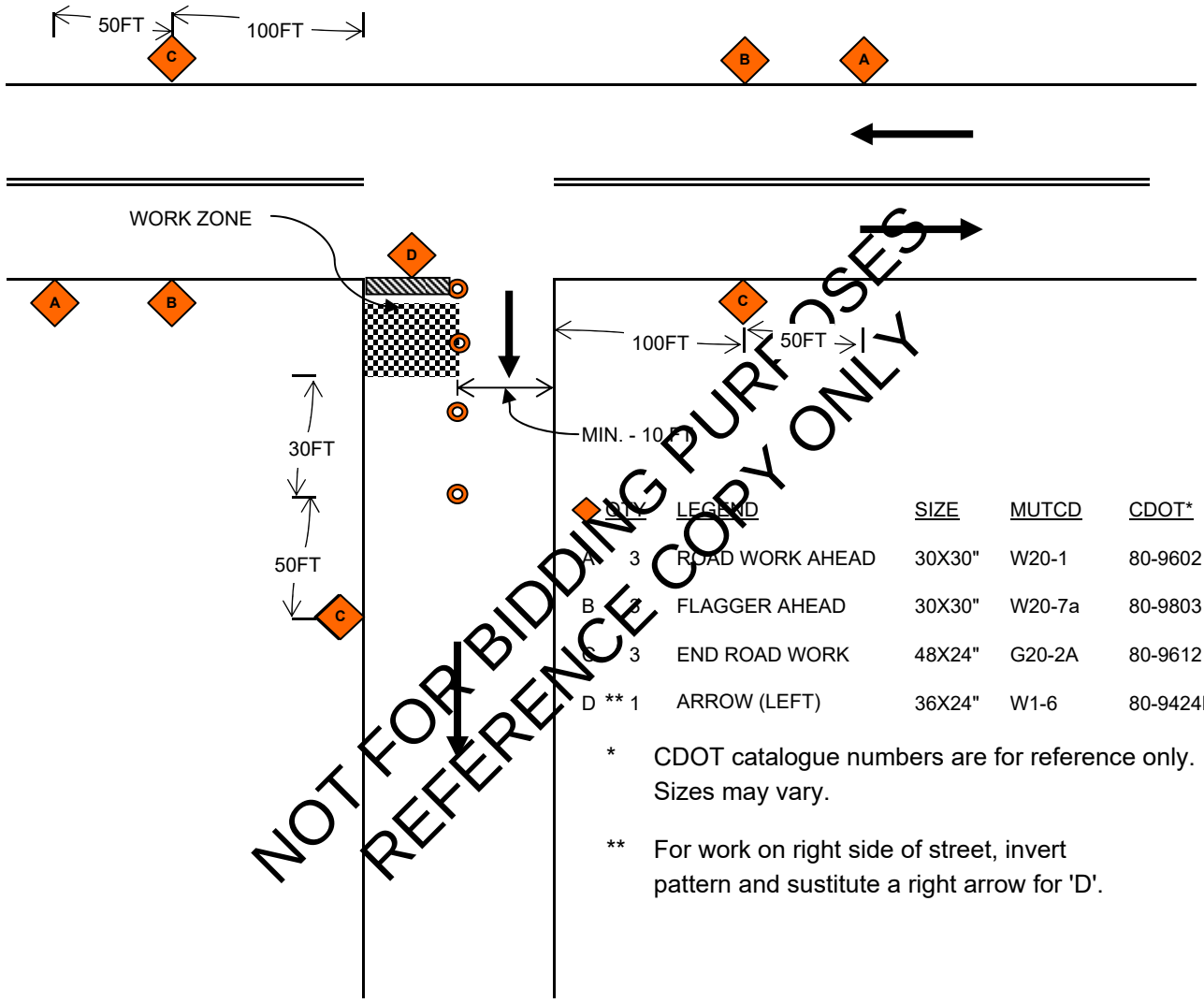
DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

9/26/2009
Rev. 1. 06/28/10
Rev. 2. 10/13/10

NTS

WORK AT INTERSECTION -
-T INTERSECTION OF A TWO WAY AND A ONE WAY STREET
PLAN 24A2



	QTY.	LEGEND	SIZE	MUTCD	CDOT*
A	3	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	3	FLAGGER AHEAD	30X30"	W20-7a	80-9803
C	3	END ROAD WORK	48X24"	G20-2A	80-9612
D	** 1	ARROW (LEFT)	36X24"	W1-6	80-9424R

* CDOT catalogue numbers are for reference only. Sizes may vary.

** For work on right side of street, invert pattern and sustitute a right arrow for 'D'.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

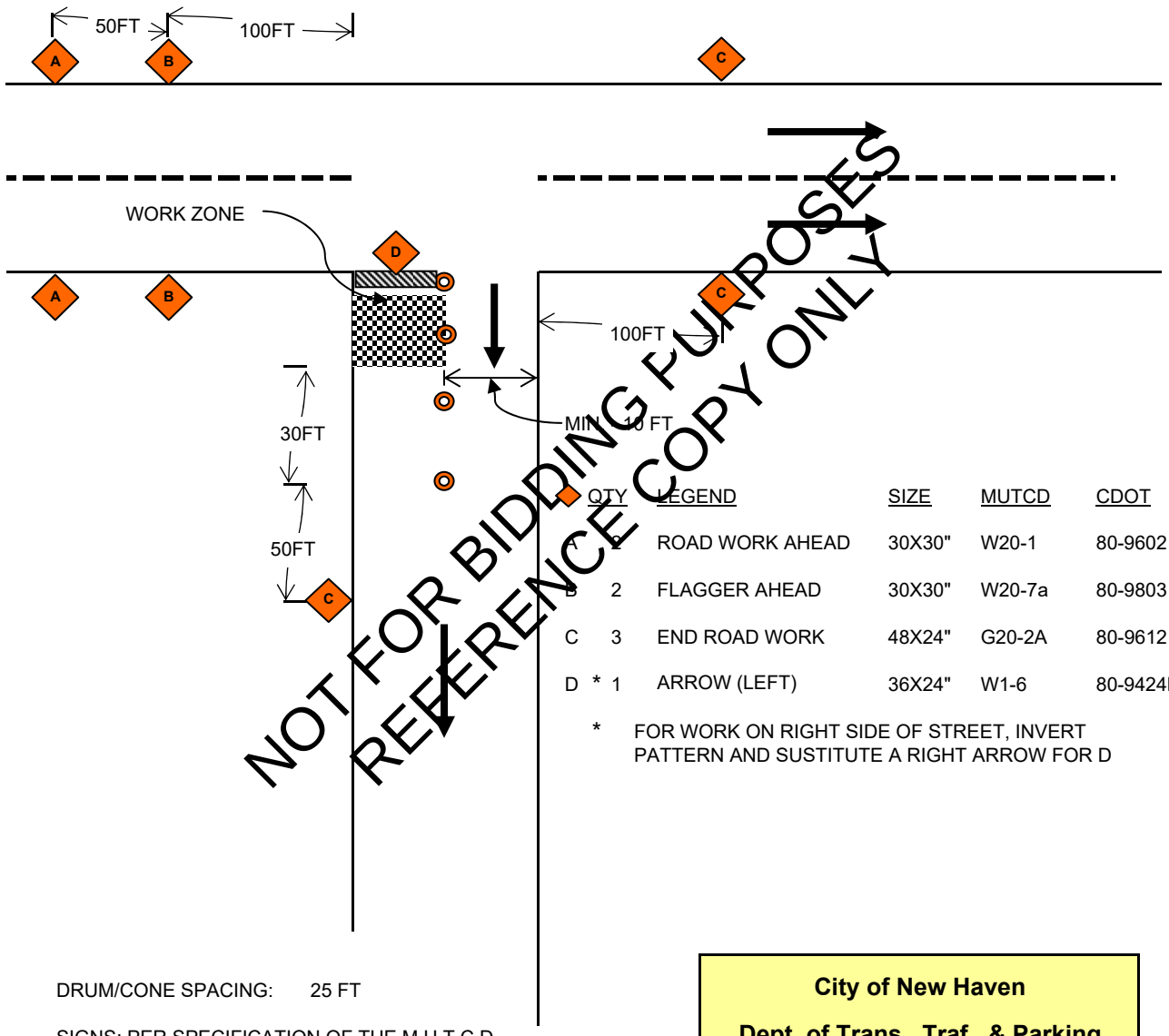
DENOTES TYPE III BARRIER

City of New Haven
Dept. of Trans., Traf., & Parking
PLAN 24A2

NTS
6/28/10

Rev. 1 11/3/10

WORK AT INTERSECTION
-T INTERSECTION OF ONE WAY STREETS
PLAN 24A3



	QTY	LEGEND	SIZE	MUTCD	CDOT
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	FLAGGER AHEAD	30X30"	W20-7a	80-9803
C	3	END ROAD WORK	48X24"	G20-2A	80-9612
D *	1	ARROW (LEFT)	36X24"	W1-6	80-9424R

* FOR WORK ON RIGHT SIDE OF STREET, INVERT PATTERN AND SUSTITUTE A RIGHT ARROW FOR D

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

City of New Haven
Dept. of Trans., Traf., & Parking
PLAN 24A3

NTS

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

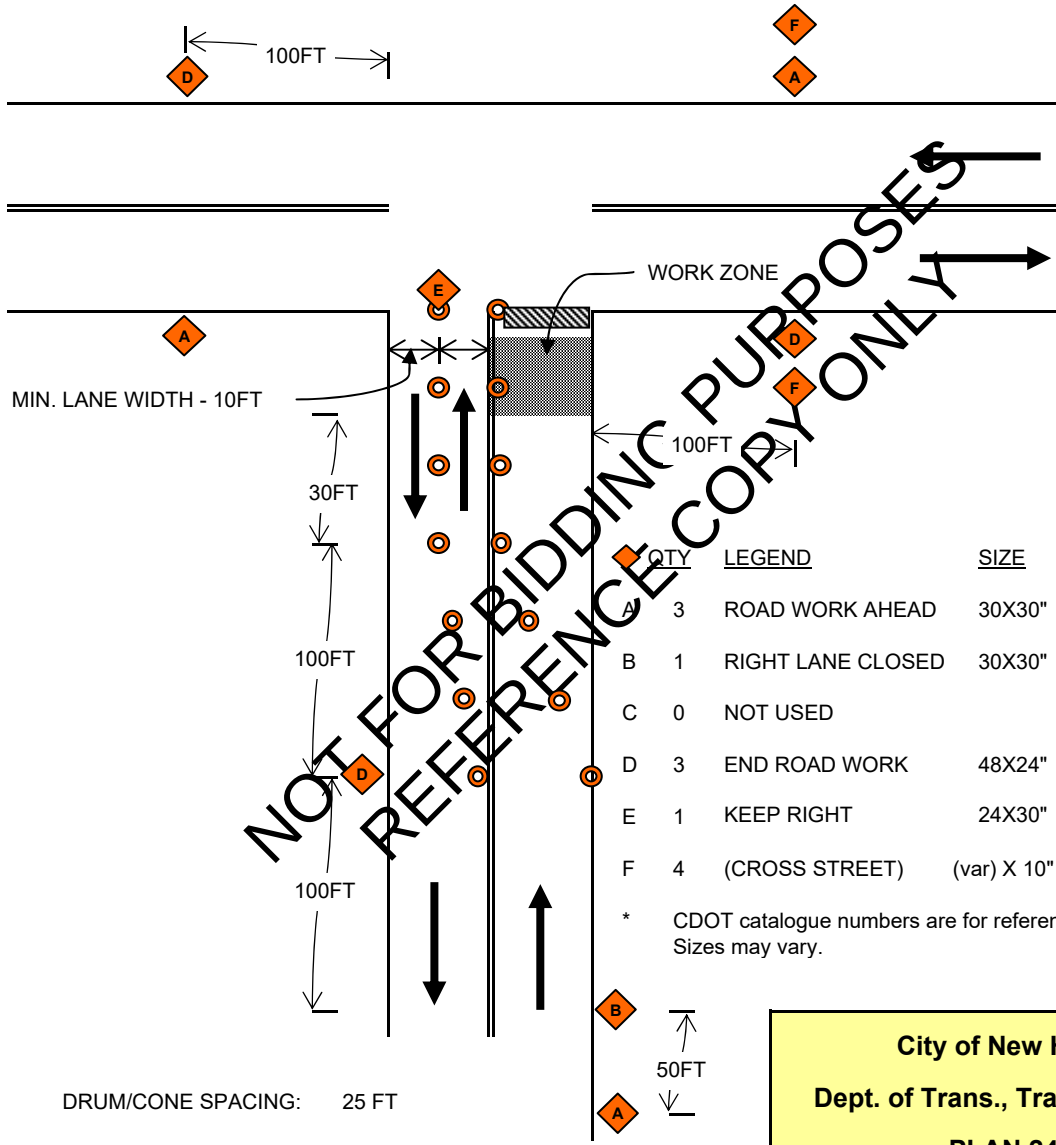
DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

11/3/10

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 24A3

WORK AT NEAR SIDE OF INTERSECTION IN RIGHT LANE
- T INTERSECTION OF TWO WAY STREETS -



*	QTY	LEGEND	SIZE	MUTCD	CDOT
A	3	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	0	NOT USED			
D	3	END ROAD WORK	48X24"	G20-2A	80-9612
E	1	KEEP RIGHT	24X30"	R4-7	31-1526
F	4	(CROSS STREET)	(var) X 10"	D-3	80-9916

* CDOT catalogue numbers are for reference only.
Sizes may vary.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

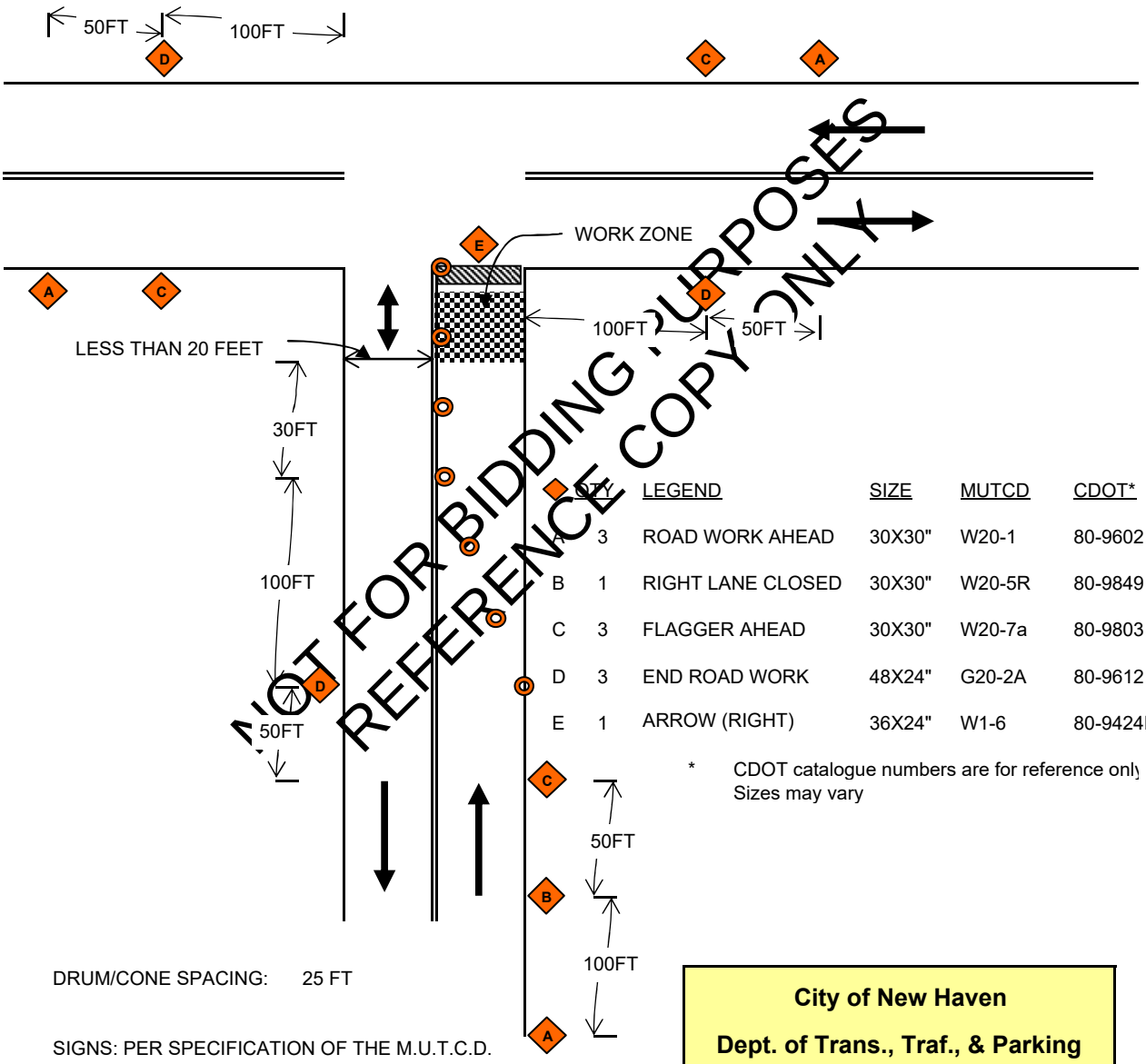
PLAN 24B

NTS
5/5/09
Rev. 1. 6/8/11

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 24B

WORK AT T INTERSECTION IN RIGHT LANE
-INTERSECTION OF TWO WAY STREETS-

USE THIS PLAN FOR ALTERNATING ONE WAY TRAFFIC WHEN THE UNOBSTRUCTED ROADWAY AREA OUTSIDE THE WORK ZONE IS LESS THAN TWENTY FEET WIDE.



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	3	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	3	FLAGGER AHEAD	30X30"	W20-7a	80-9803
D	3	END ROAD WORK	48X24"	G20-2A	80-9612
E	1	ARROW (RIGHT)	36X24"	W1-6	80-9424L

* CDOT catalogue numbers are for reference only
Sizes may vary

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

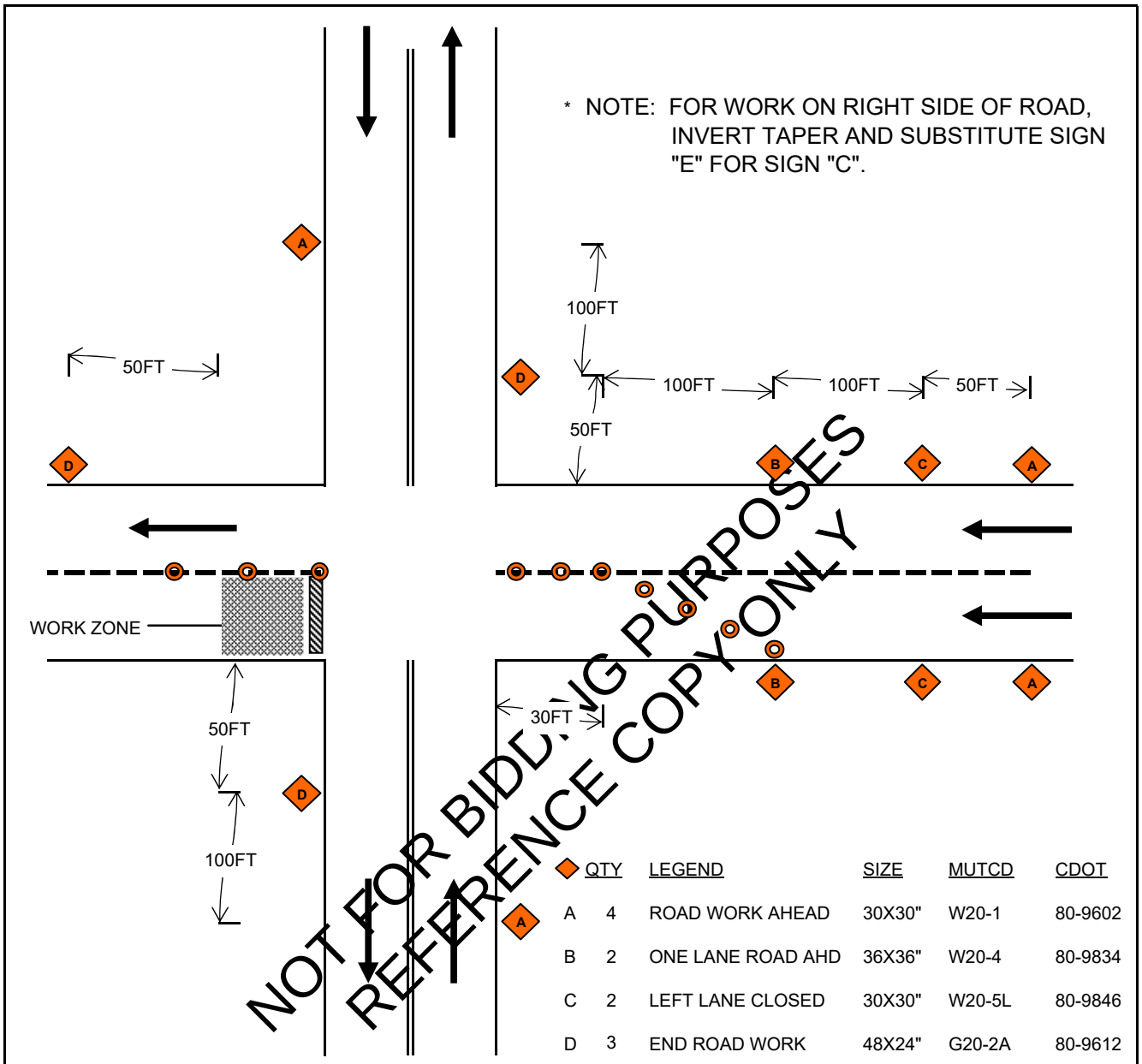
DENOTES TYPE III BARRIER

City of New Haven
Dept. of Trans., Traf., & Parking
PLAN 24B1

NTS

6/22/09

WORK FAR SIDE OF INTERSECTION
-INTERSECTION OF ONE WAY AND TWO WAY STREET-



	QTY	LEGEND	SIZE	MUTCD	CDOT
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	ONE LANE ROAD AHD	36X36"	W20-4	80-9834
C	2	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
D	3	END ROAD WORK	48X24"	G20-2A	80-9612
* E	2	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D. WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

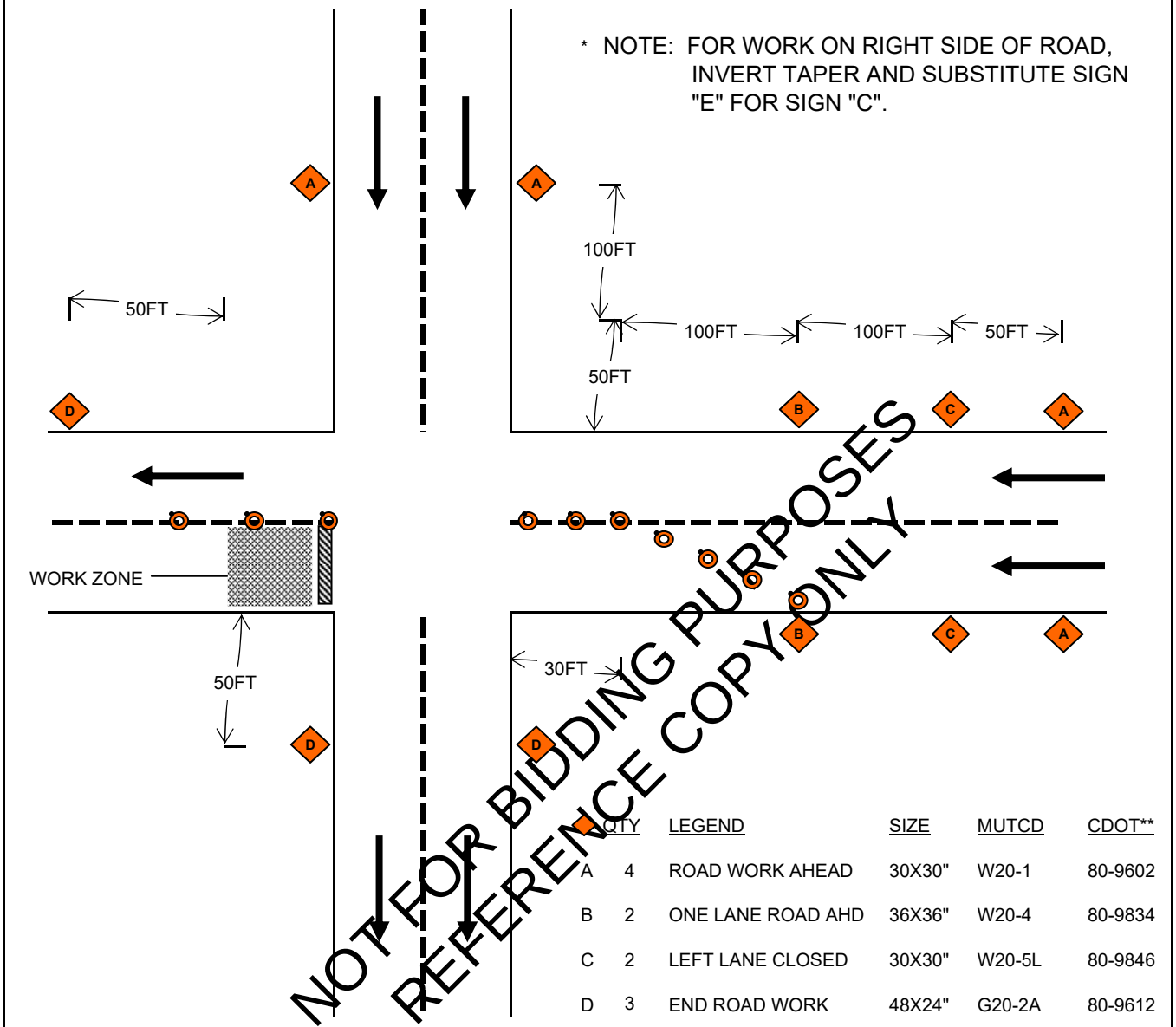
PLAN 24C

NTS

9/14/09

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 24C

WORK FAR SIDE OF INTERSECTION
-INTERSECTION OF TWO ONE WAY STREETS-



	QTY	LEGEND	SIZE	MUTCD	CDOT**
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	ONE LANE ROAD AHD	36X36"	W20-4	80-9834
C	2	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
D	3	END ROAD WORK	48X24"	G20-2A	80-9612
* E	2	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D. WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

** CDOT catalogue numbers are for reference only. Sizes may vary.

DENOTES 42" TRAFFIC DRUM OR (MIN.) 28" TRAFFIC CONE

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 24C1

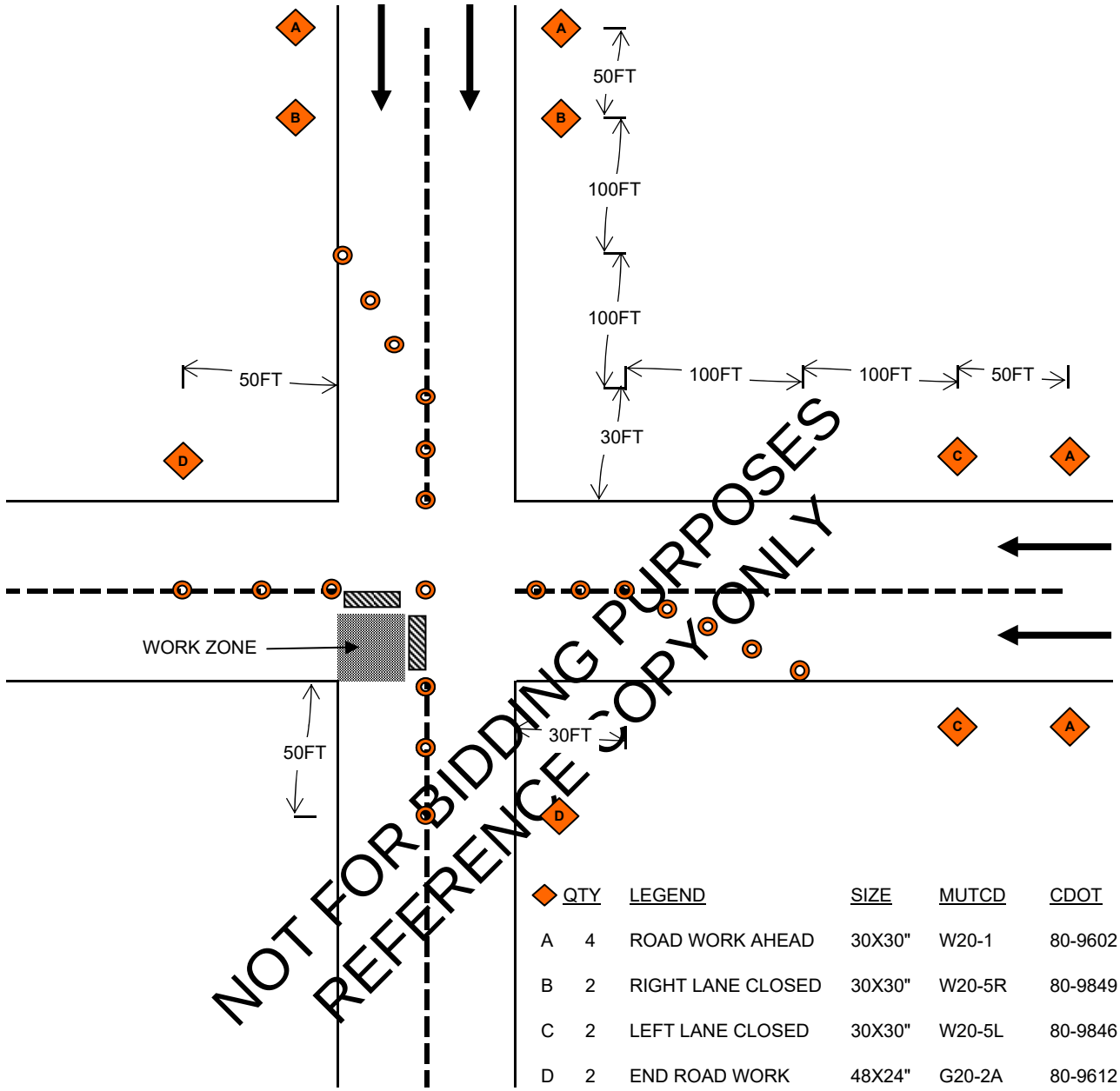
NTS

8/18/11

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 24C1

Plan 26A

WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF TWO ONE WAY STREETS-



QTY		LEGEND	SIZE	MUTCD	CDOT
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	2	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
D	2	END ROAD WORK	48X24"	G20-2A	80-9612

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

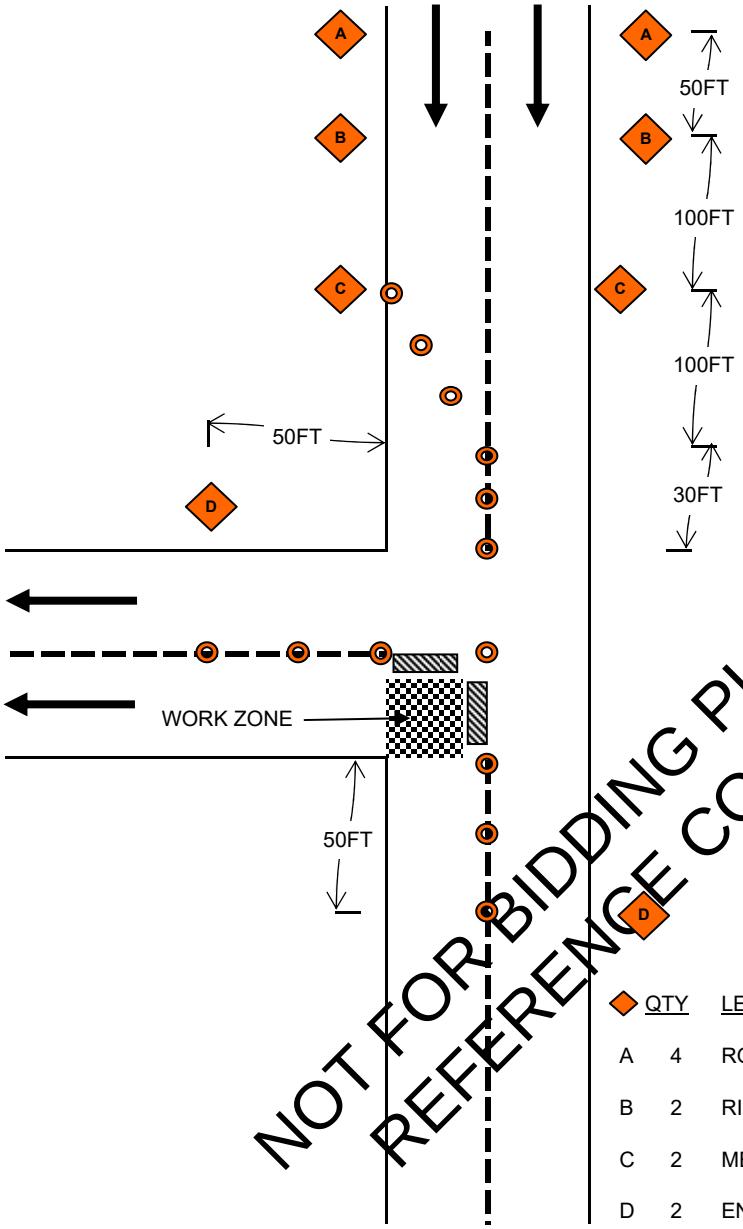
Dept. of Trans., Traf., & Parking

PLAN 26A

NTS

4/23/09
rev 1. 5/2/12

WORK IN QUADRANT OF T INTERSECTION
-INTERSECTION OF TWO ONE WAY STREETS-
PLAN 26A1



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	2	MERGE (SYM)	30X30"	W20-5R	80-9917
D	2	END ROAD WORK	48X24"	G20-2A	80-9612

DRUM/CONE SPACING: 25 FT

* CDOT catalogue numbers are for reference only. Sizes may vary.

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

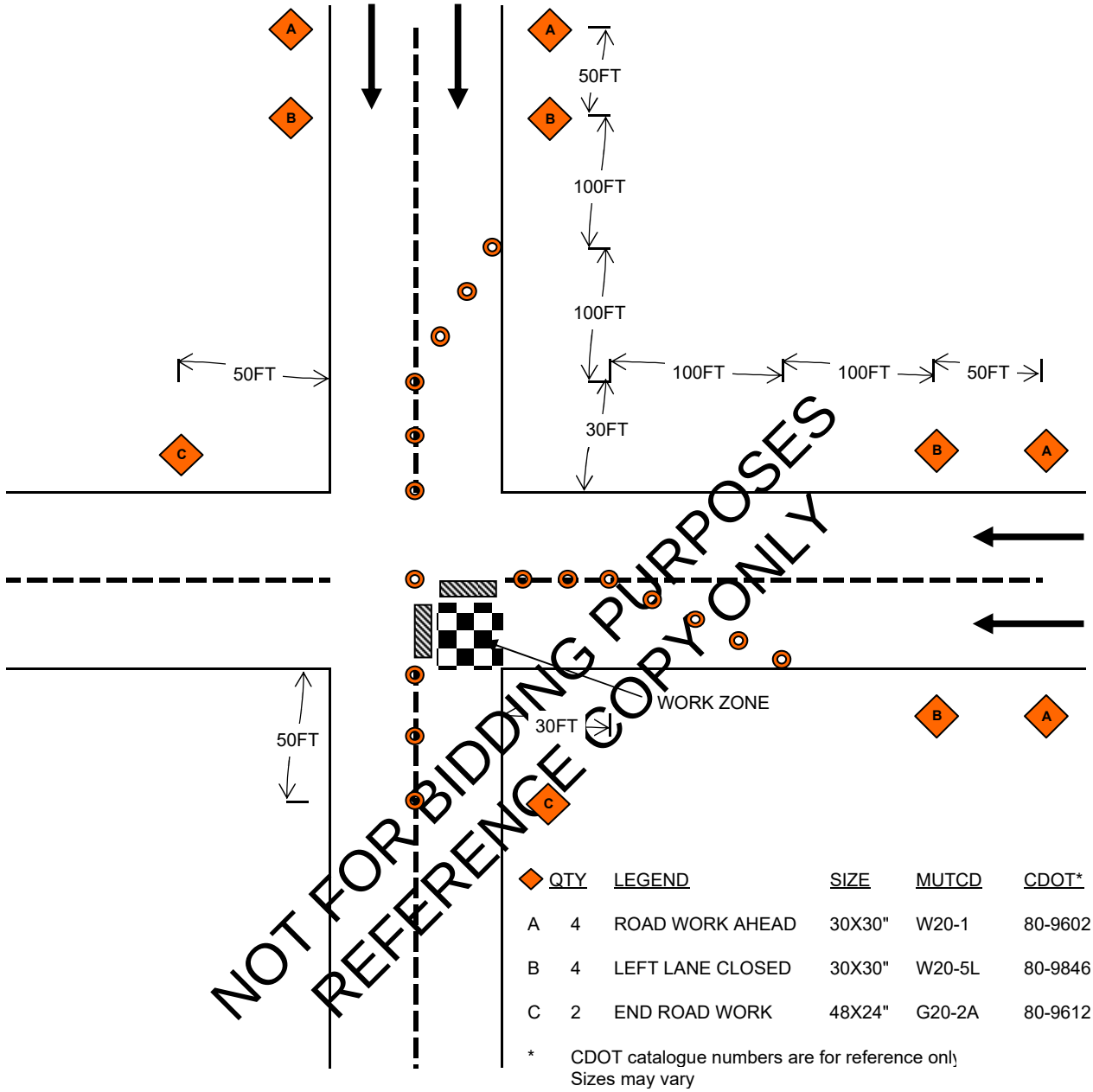
PLAN 26A1

NTS

11/3/2010

H:\Bfile\EXCEL\WORKZONE\Work Zone\Plan 26A1

WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF TWO ONE WAY STREETS-
PLAN 26B



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	4	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
C	2	END ROAD WORK	48X24"	G20-2A	80-9612

* CDOT catalogue numbers are for reference only
Sizes may vary

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven
Dept. of Trans., Traf., & Parking
PLAN 26B

NTS
5/25/09
Rev. 1. 10/25/10

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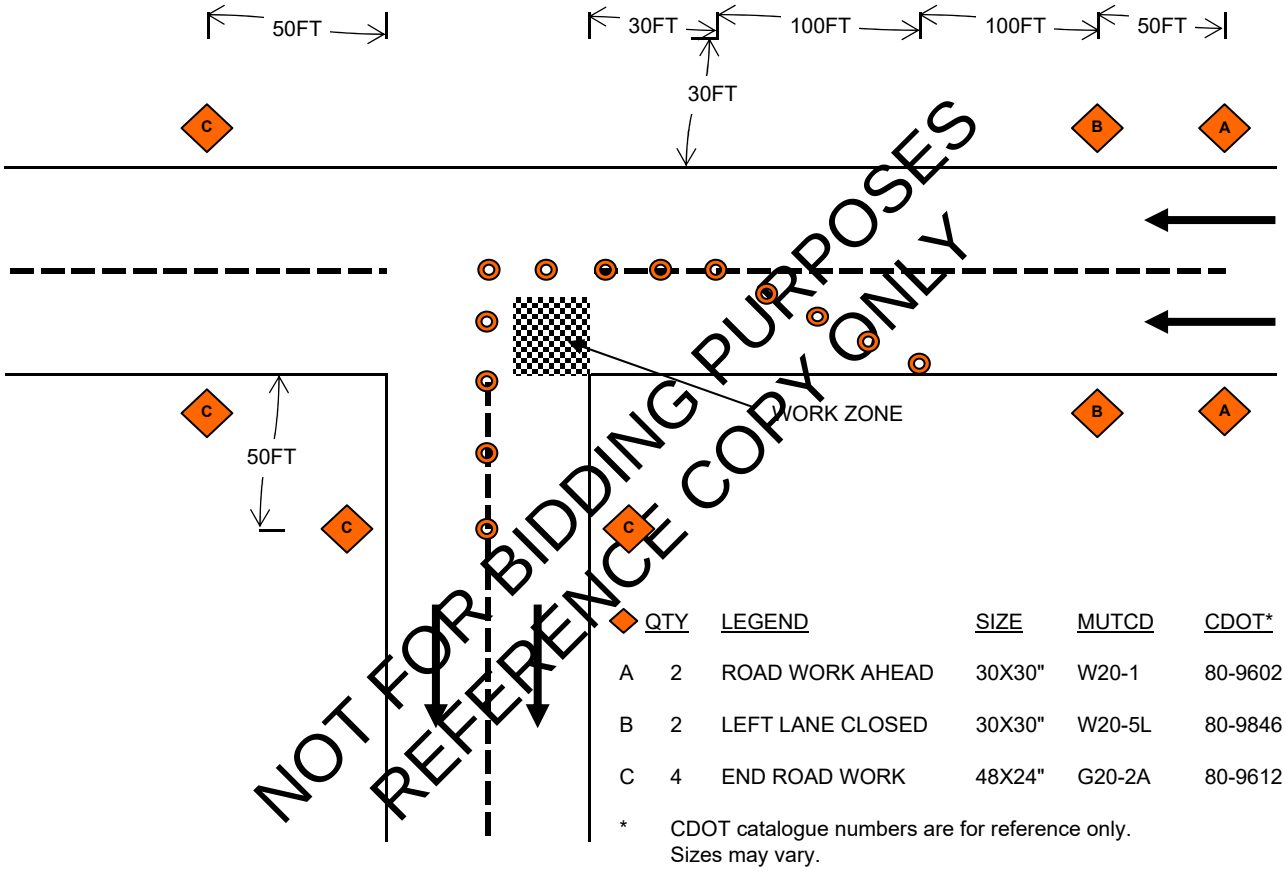
WORK IN QUADRANT OF INTERSECTION
-T INTERSECTION OF TWO ONE WAY STREETS-
PLAN 26B1



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	2	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
C	4	END ROAD WORK	48X24"	G20-2A	80-9612

* CDOT catalogue numbers are for reference only. Sizes may vary.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 26B1

NTS

1/5/11

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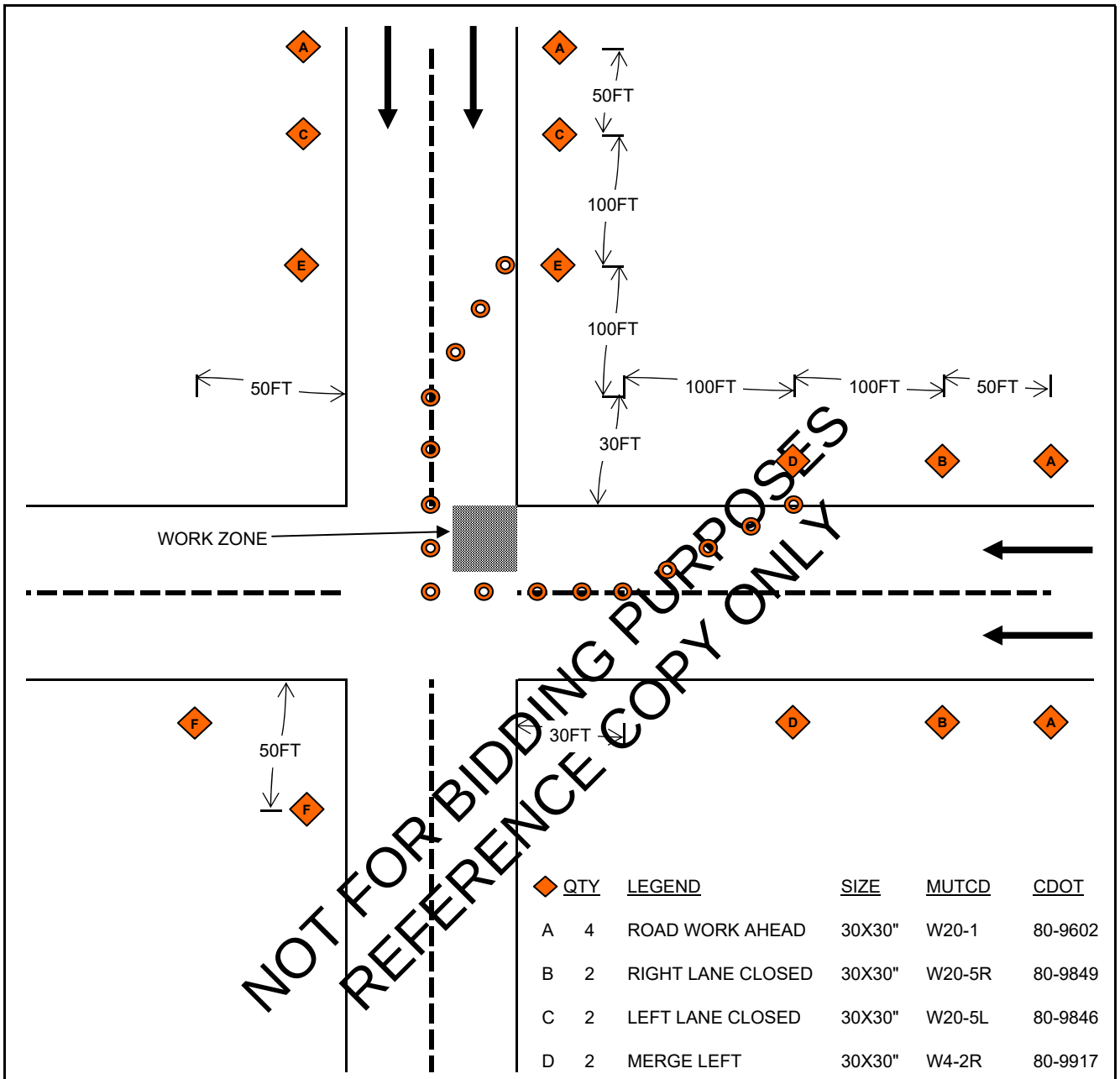
WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF TWO ONE WAY STREETS-



QTY		LEGEND	SIZE	MUTCD	CDOT
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	2	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
D	2	MERGE LEFT	30X30"	W4-2R	80-9917
E	2	MERGE RIGHT	30X30"	W4-2L	80-9918
F	2	END ROAD WORK	48X24"	G20-2A	80-9612

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES 40' TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 26C

NTS
4/29/09
rev.#1 3/6/12

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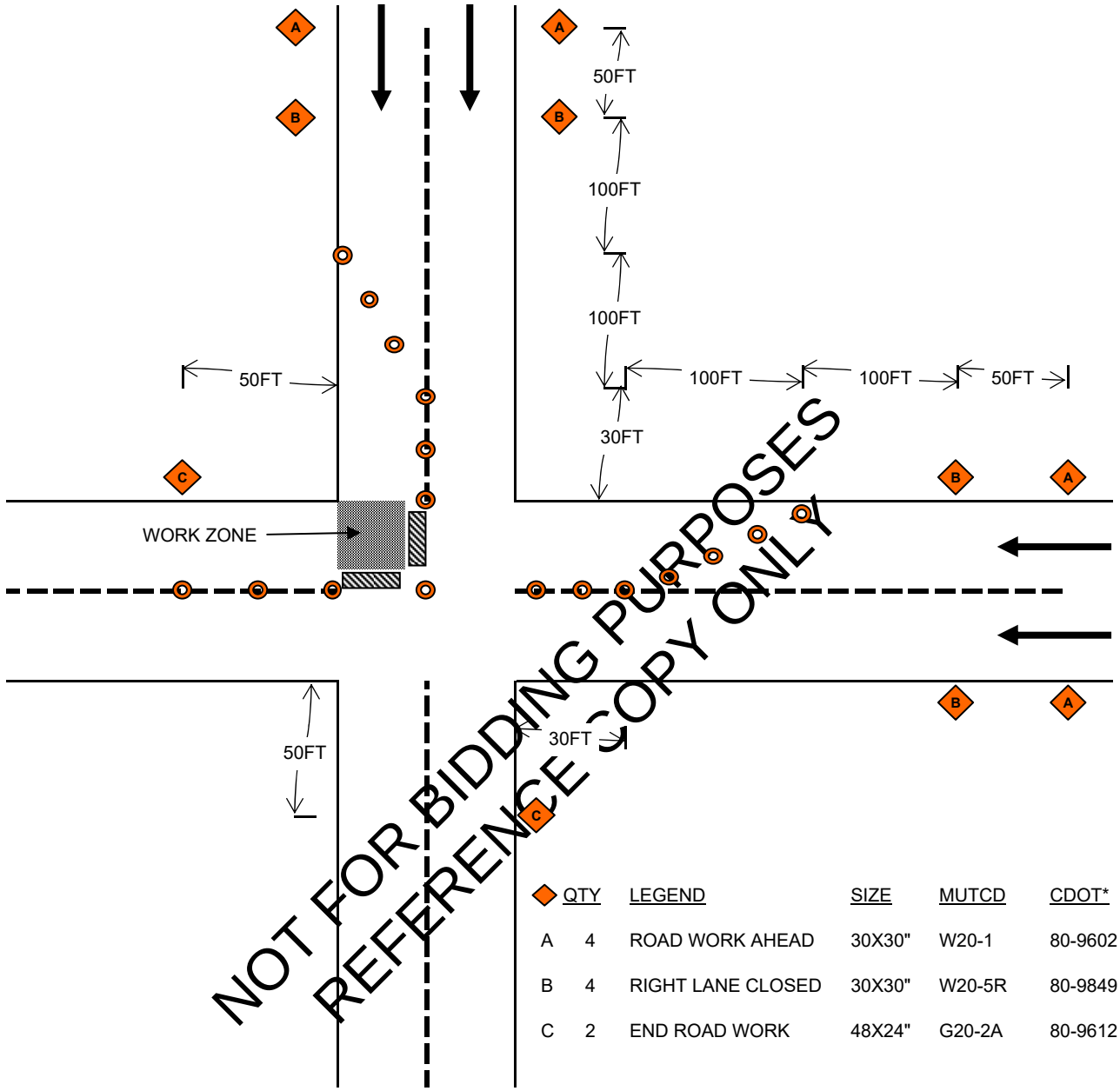
WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF TWO ONE WAY STREETS-



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	4	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	2	END ROAD WORK	48X24"	G20-2A	80-9612

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

* CDOT catalogue numbers are for reference only. Sizes may vary.

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 26D

NTS
8/25/2009
Rev 1. 6/8/11

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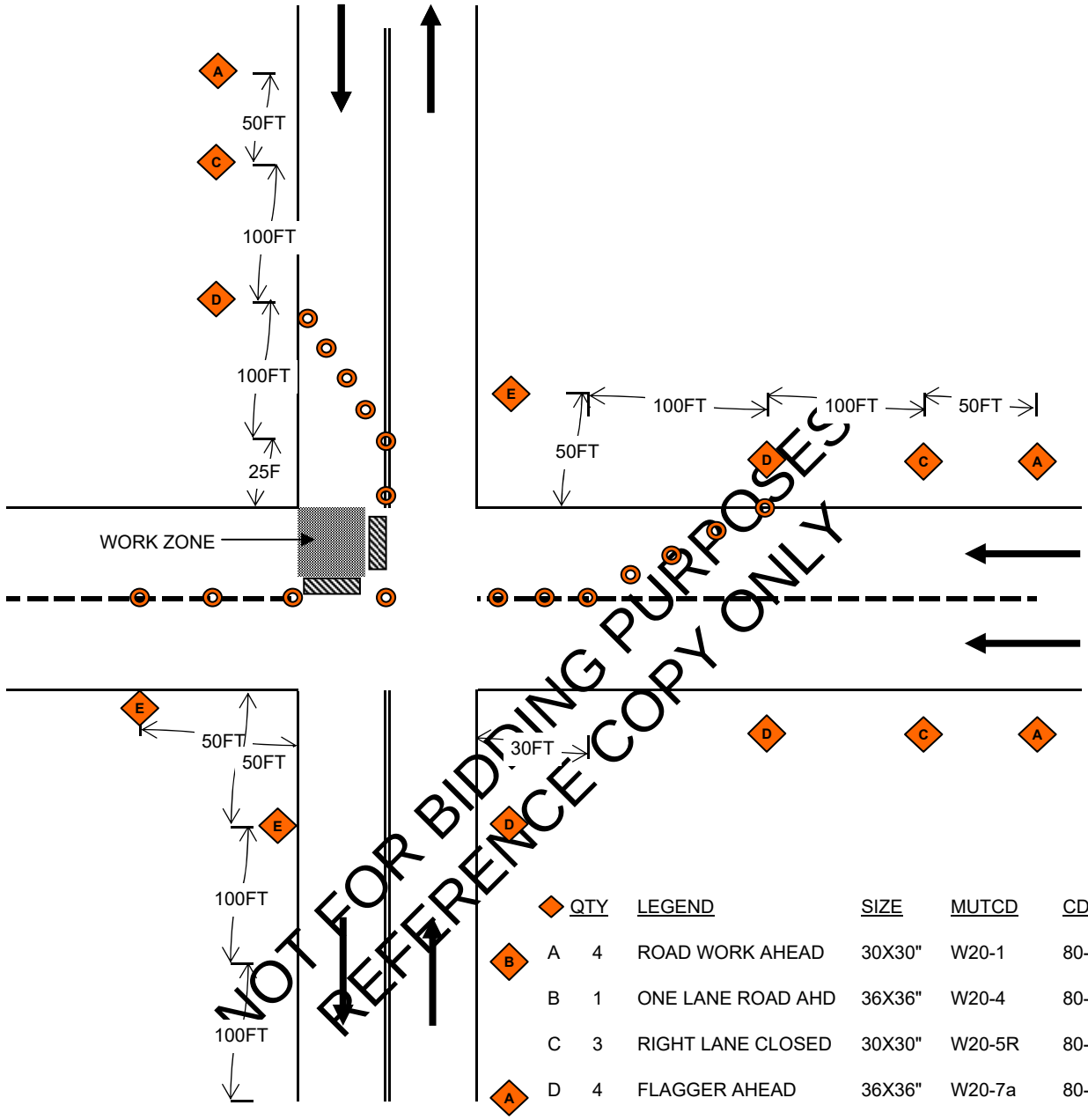
WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF ONE WAY AND TWO WAY STREET-



QTY		LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	ONE LANE ROAD AHD	36X36"	W20-4	80-9834
C	3	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
D	4	FLAGGER AHEAD	36X36"	W20-7a	80-9603
E	3	END ROAD WORK	48X24"	G20-2A	80-9612

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D. WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

* CDOT catalogue numbers are for reference only. Sizes may vary.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 26E

NTS

8/21/09

Rev. 1. 03/31/11

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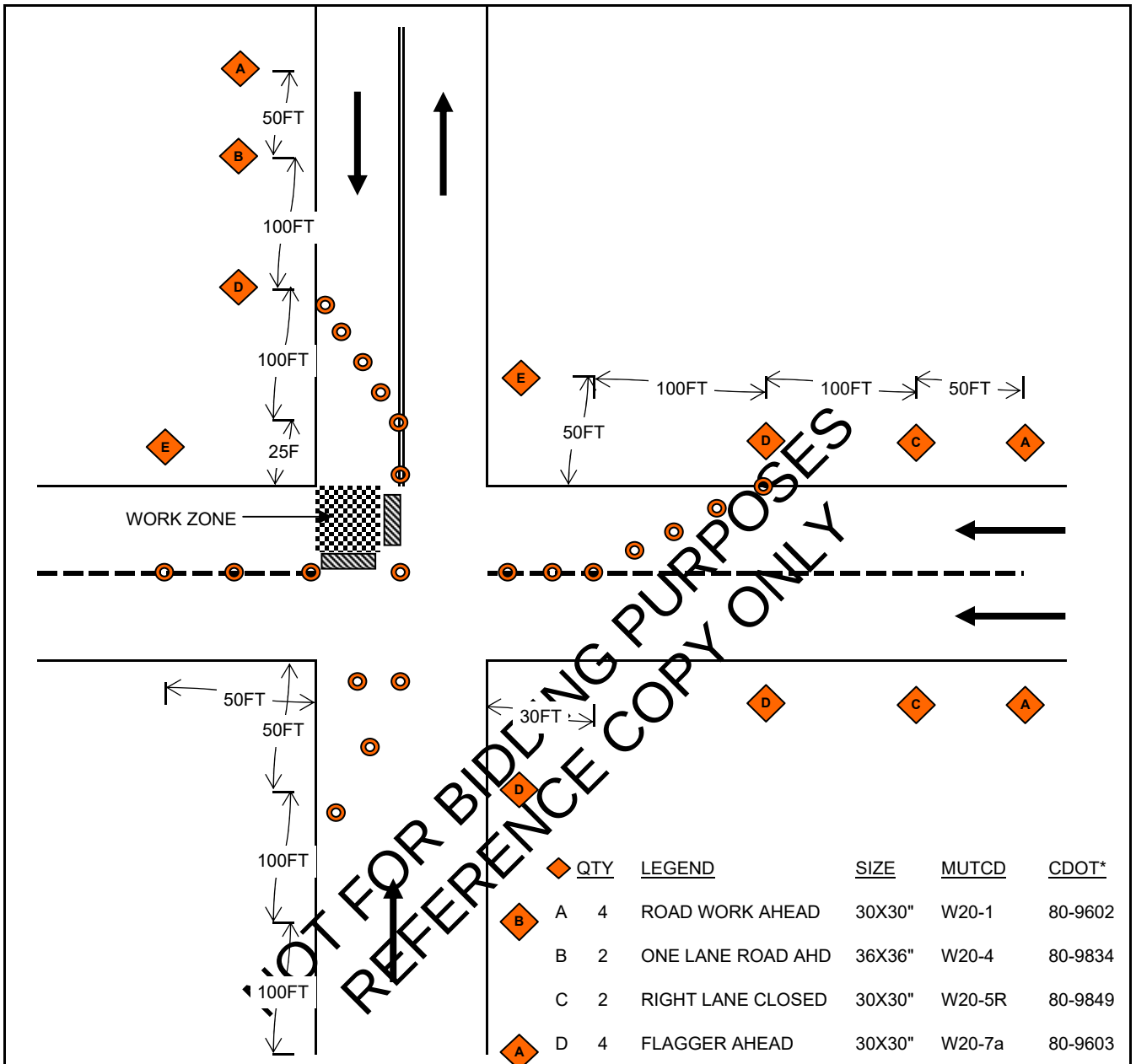
WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF ONE WAY AND TWO WAY STREET-



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	ONE LANE ROAD AHD	36X36"	W20-4	80-9834
C	2	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
D	4	FLAGGER AHEAD	30X30"	W20-7a	80-9603
E	3	END ROAD WORK	48X24"	G20-2A	80-9612

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D. WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

* CDOT catalogue numbers are for reference only. Sizes may vary.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

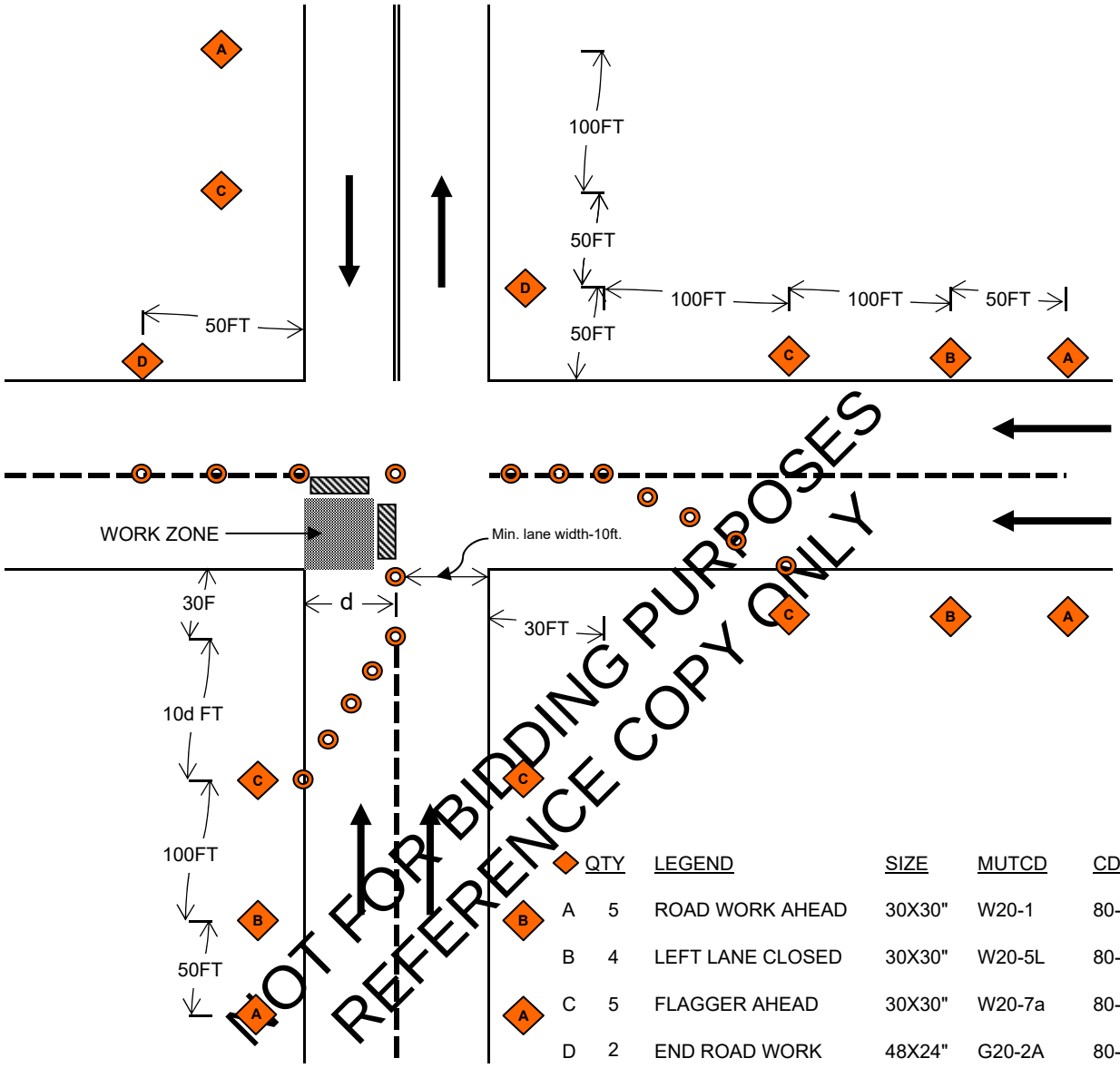
Dept. of Trans., Traf., & Parking

PLAN 26E(1).

NTS

6/7/10

WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF ONE WAY AND TWO WAY STREET-



QTY		LEGEND	SIZE	MUTCD	CDOT*
A	5	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	4	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
C	5	FLAGGER AHEAD	30X30"	W20-7a	80-9603
D	2	END ROAD WORK	48X24"	G20-2A	80-9612

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D. WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

* CDOT catalogue numbers are for reference only. Sizes may vary.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

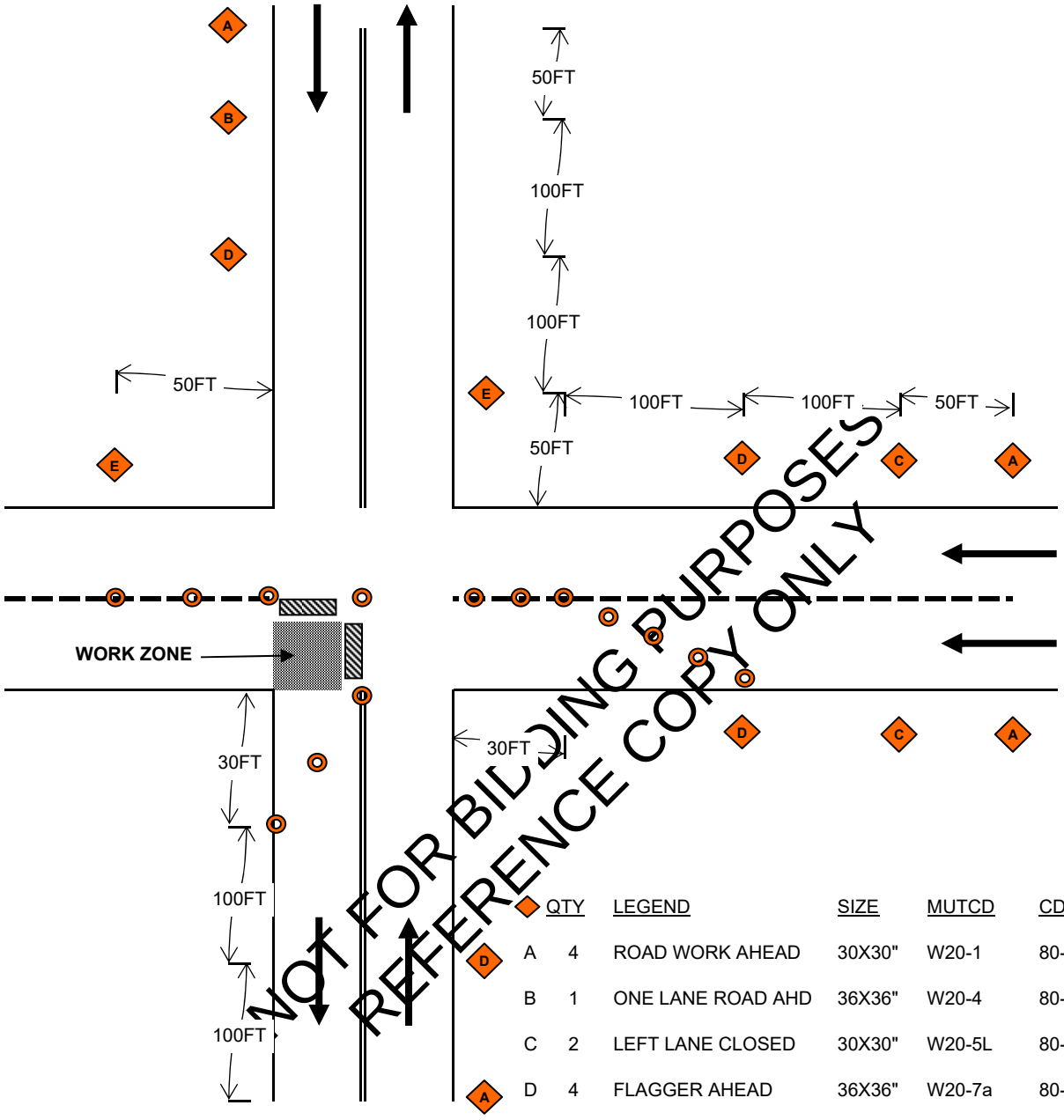
Dept. of Trans., Traf., & Parking

PLAN 26E(2)

NTS

5/17/11

WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF ONE WAY AND TWO WAY STREET-



	QTY	LEGEND	SIZE	MUTCD	CDOT
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	ONE LANE ROAD AHD	36X36"	W20-4	80-9834
C	2	LEFT LANE CLOSED	30X30"	W20-5L	80-9846
D	4	FLAGGER AHEAD	36X36"	W20-7a	80-9603
E	3	END ROAD WORK	48X24"	G20-2A	80-9612

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT
ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 28"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 26F

NTS

8/20/09

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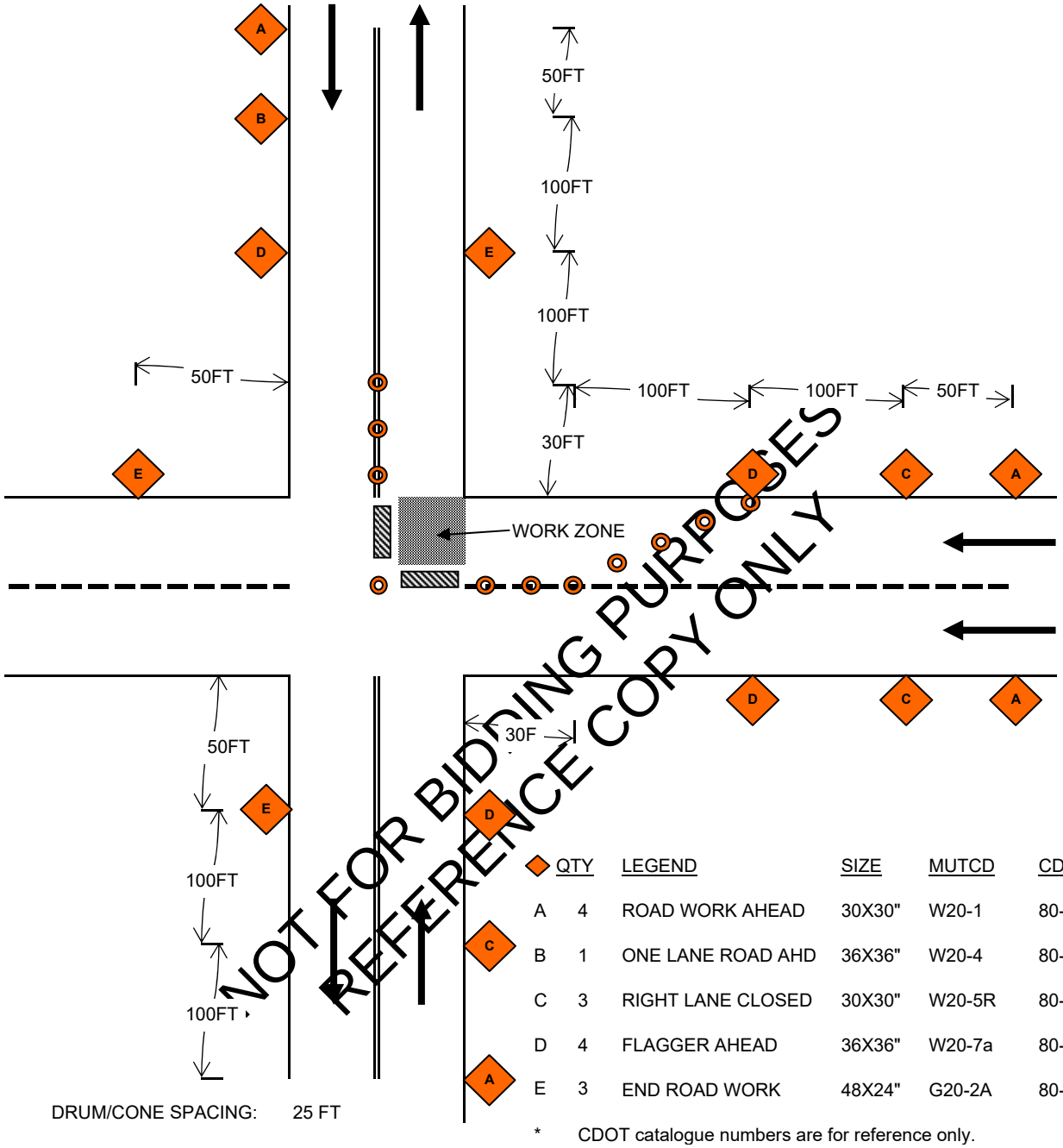
WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF ONE WAY AND TWO WAY STREET-



	QTY	LEGEND	SIZE	MUTCD	CDOT
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	ONE LANE ROAD AHD	36X36"	W20-4	80-9834
C	3	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
D	4	FLAGGER AHEAD	36X36"	W20-7a	80-9603
E	3	END ROAD WORK	48X24"	G20-2A	80-9612

* CDOT catalogue numbers are for reference only. Sizes may vary.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D. WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 26G

NTS

9/3/09

Rev. 1. 3/31/11

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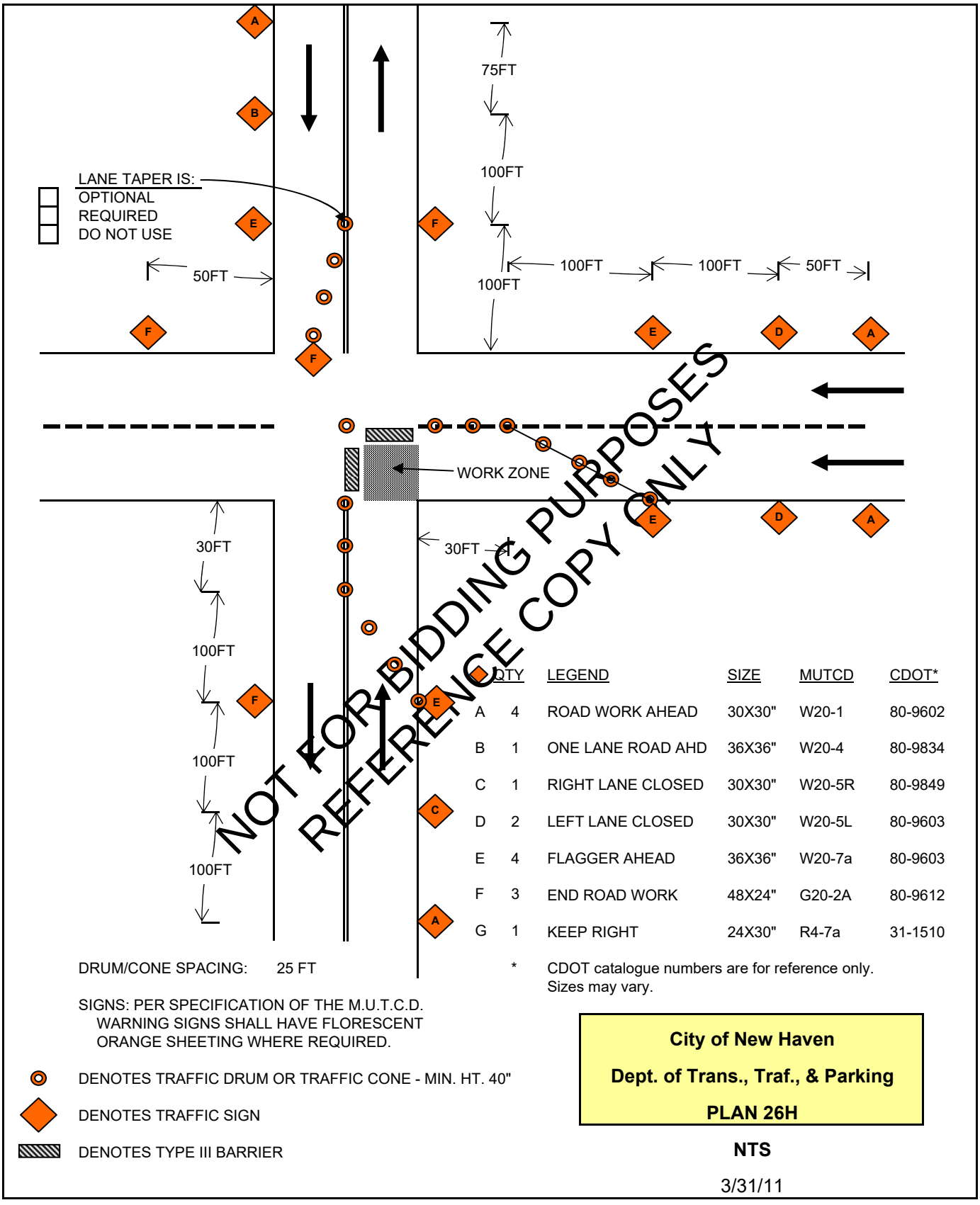
WORK IN QUADRANT OF INTERSECTION
-INTERSECTION OF ONE WAY AND TWO WAY STREET-



	QTY	LEGEND	SIZE	MUTCD	CDOT*
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	1	ONE LANE ROAD AHD	36X36"	W20-4	80-9834
C	1	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
D	2	LEFT LANE CLOSED	30X30"	W20-5L	80-9603
E	4	FLAGGER AHEAD	36X36"	W20-7a	80-9603
F	3	END ROAD WORK	48X24"	G20-2A	80-9612
G	1	KEEP RIGHT	24X30"	R4-7a	31-1510

* CDOT catalogue numbers are for reference only. Sizes may vary.

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 26H

NTS

3/31/11

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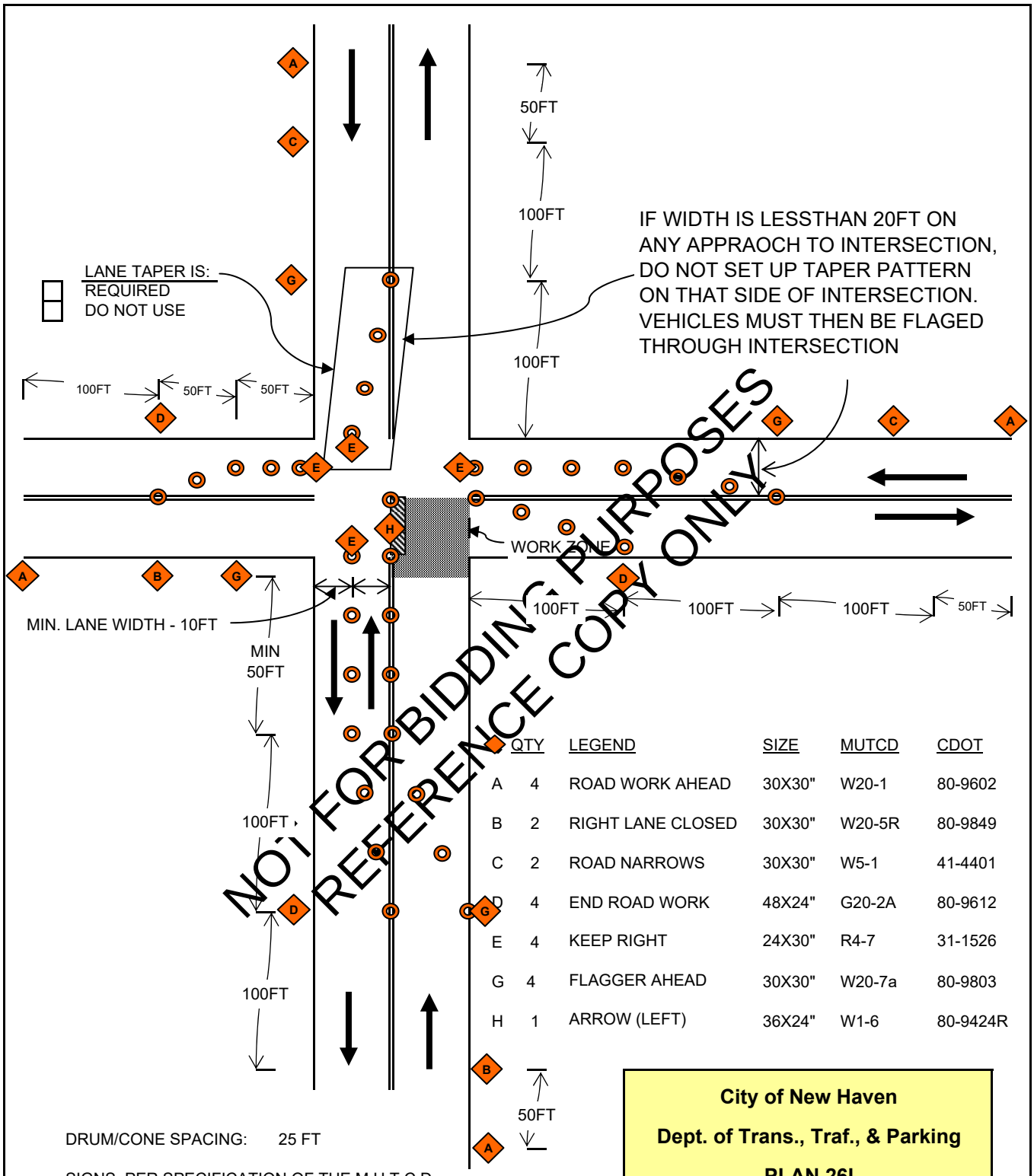
WORK QUADRANT OF INTERSECTION
-INTERSECTION OF TWO WAY STREETS-



	QTY	LEGEND	SIZE	MUTCD	CDOT
A	4	ROAD WORK AHEAD	30X30"	W20-1	80-9602
B	2	RIGHT LANE CLOSED	30X30"	W20-5R	80-9849
C	2	ROAD NARROWS	30X30"	W5-1	41-4401
D	4	END ROAD WORK	48X24"	G20-2A	80-9612
E	4	KEEP RIGHT	24X30"	R4-7	31-1526
G	4	FLAGGER AHEAD	30X30"	W20-7a	80-9803
H	1	ARROW (LEFT)	36X24"	W1-6	80-9424R

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 26I

DRUM/CONE SPACING: 25 FT

SIGNS: PER SPECIFICATION OF THE M.U.T.C.D.
WARNING SIGNS SHALL HAVE FLORESCENT ORANGE SHEETING WHERE REQUIRED.

DENOTES TRAFFIC DRUM OR TRAFFIC CONE - MIN. HT. 40"

DENOTES TRAFFIC SIGN

DENOTES TYPE III BARRIER

NTS

4/1/11

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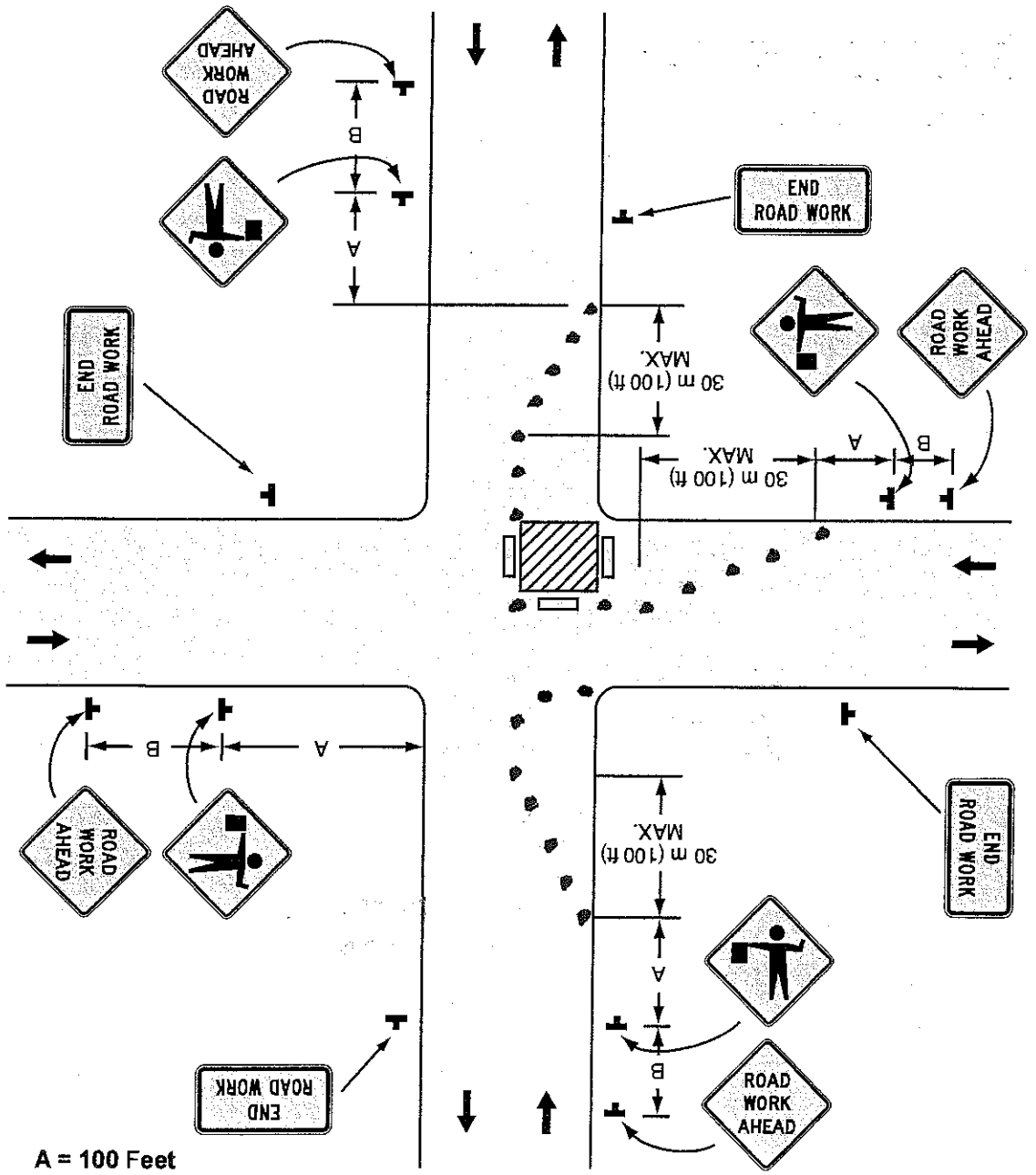
WORK IN QUADRANT OF INTERSECTION



A = 100 Feet

B = 50 Feet

Indicates Type III Barricade

NTS

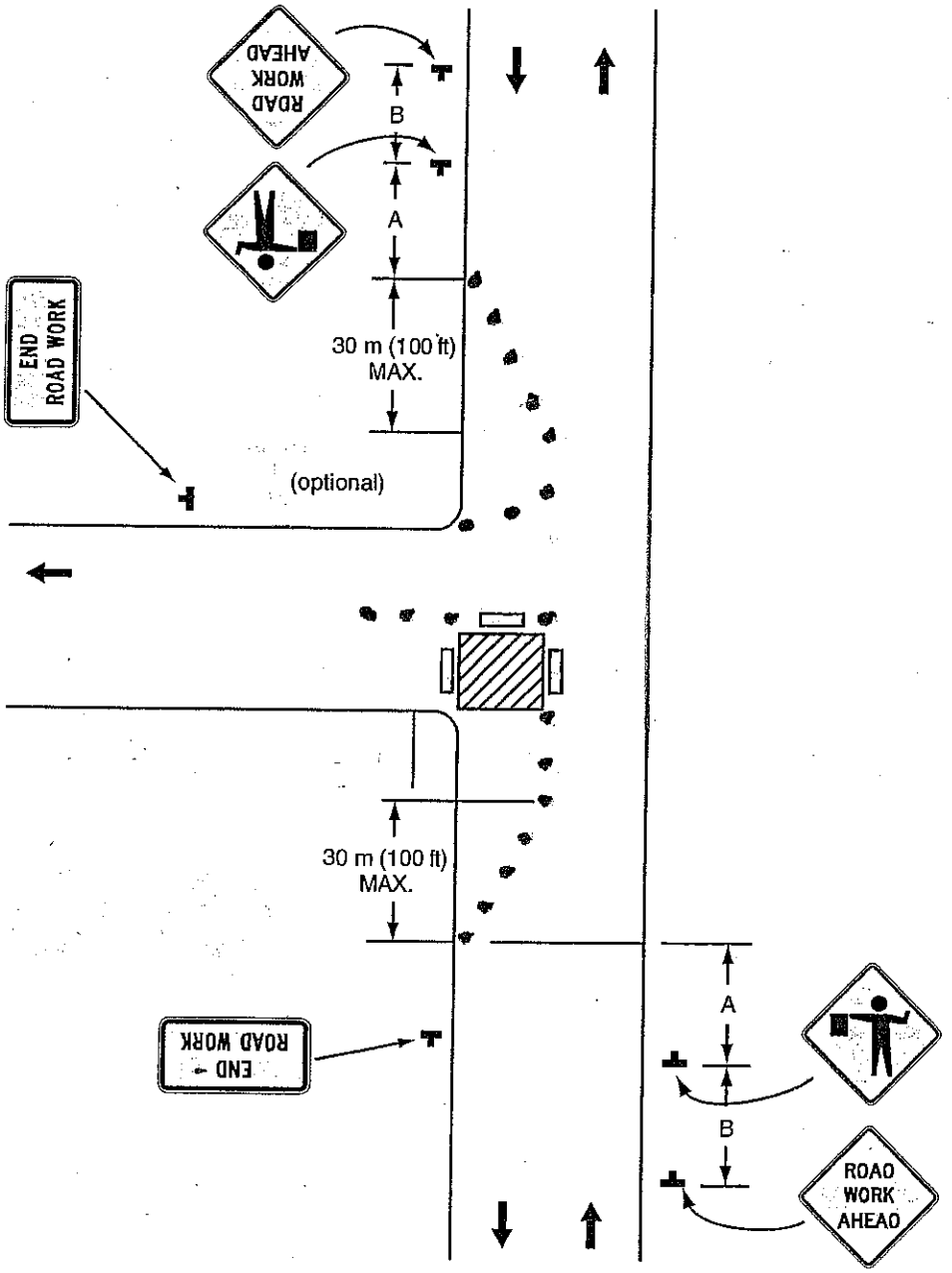
City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 27

5/5/09

WORK IN QUADRANT OF INTERSECTION
-T TYPE INTERSECTION OF A TWO WAY AND A ONE WAY AWAY STREET-



A = 100 Feet

B = 50 Feet

City of New Haven
Dept. of Trans., Traf., & Parking
PLAN 27A

NTS

4/24/2009

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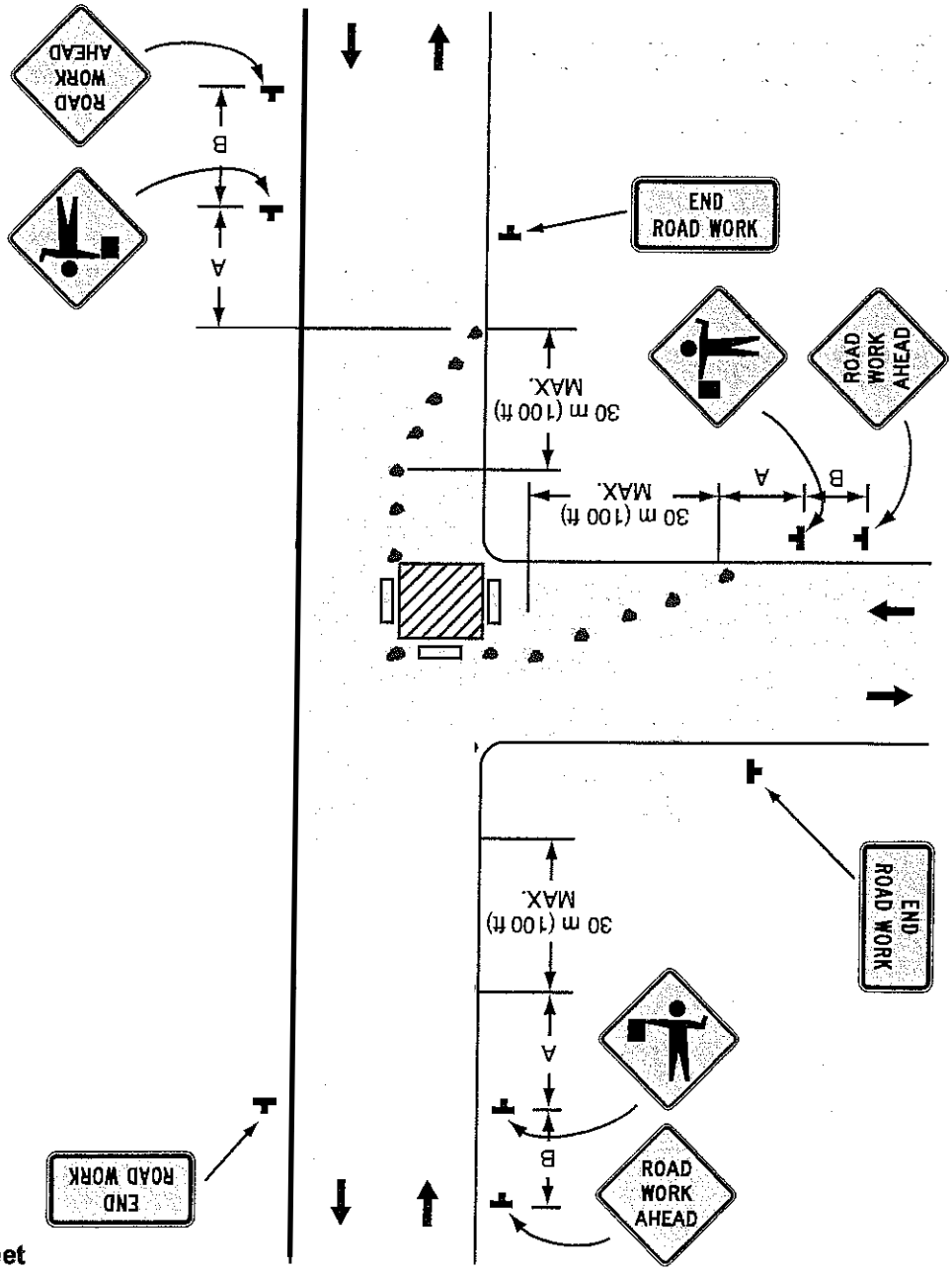
WORK IN QUADRANT OF INTERSECTION



A = 100 Feet

B = 50 Feet

Indicates Type III Barricade

NTS

City of New Haven

Dept. of Trans., Traf., & Parking

PLAN 27B

5/5/09

SIDEWALK CLOSURE (LESS THAN A BLOCK), NON WORK HOURS

PATTERN FOR USE ON ROADWAYS POSTED 25 MPH

Std. 28" TRAFFIC CONE OR EQUIVALENT PER SEC. 6F.59 OF THE M.U.T.C.D. SPACED (20FT) TWENTY FEET APART.

LONG TERM CLOSURES MAY REQUIRE PLACEMENT OF TPCBC- ADJUST "d" TO ACCOMMODATE WIDTH OF TPCBC
LONG TERM CLOSURES REQUIRE DETAILED PLAN SUBMISSIONS

LONG TERM CLOSURES MAY REQUIRE USE OF AN ELECTRONIC FLASHING ARROW BOARD

A * W20-1, 30" X 30", ROAD WORK AHEAD

C * G20-2, 36" X 18", END ROAD WORK

F * W20-7a, 30" X30", FLAG PERSON AHEAD

G * 48" X30", SIDEWALK CLOSED

SIDEWALK CLOSED

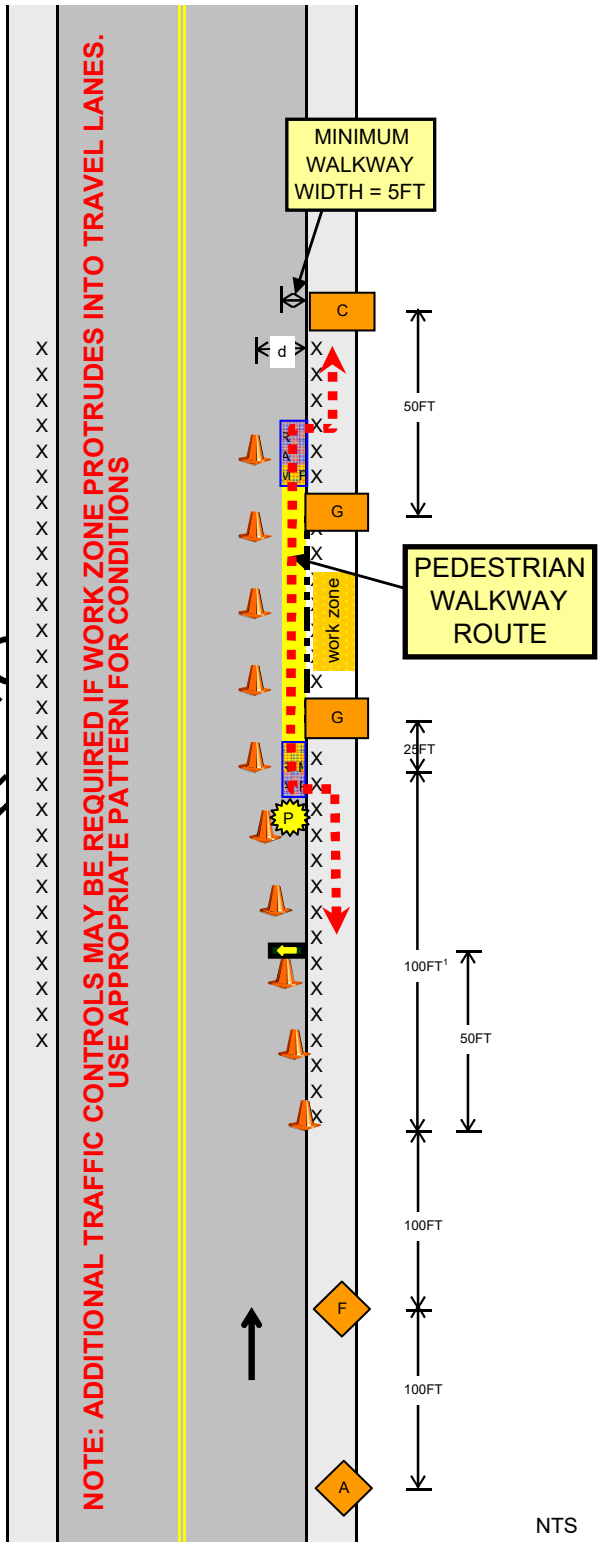
P POLICE OFFICER

RAMP ACCESSIBLE RAMP FOR PEDESTRAINS

CONSTRUCTION FENCE

X INDICATES NO PARKING (ADJUST LENGTH AS NECESSARY)

TEMPORARY PROTECTED, ACCESSIBLE WALKWAY



* FLOURESCENT ORANGE SHEETING W/BLACK LETTERING

1. If d > 10 ft, use 10d

SIDEWALK CLOSURE (LESS THAN A BLOCK), DURING WORK HOURS

PATTERN FOR USE ON ROADWAYS POSTED 25 MPH

Std. 28" TRAFFIC CONE OR EQUIVALENT PER SEC. 6F.59 OF THE M.U.T.C.D. SPACED (20FT) TWENTY FEET APART.

LONG TERM CLOSURES MAY REQUIRE PLACEMENT OF TPCBC- ADJUST "d" TO ACCOMMODATE WIDTH OF TPCBC
LONG TERM CLOSURES REQUIRE DETAILED PLAN SUBMISSIONS

LONG TERM CLOSURES MAY REQUIRE USE OF AN ELECTRONIC FLASHING ARROW BOARD

A * W20-1, 30" X 30", ROAD WORK AHEAD

C * G20-2, 36" X 18", END ROAD WORK

F * W20-7a, 30" X30", FLAG PERSON AHEAD

G * 48" X30", SIDEWALK CLOSED

SIDEWALK CLOSED

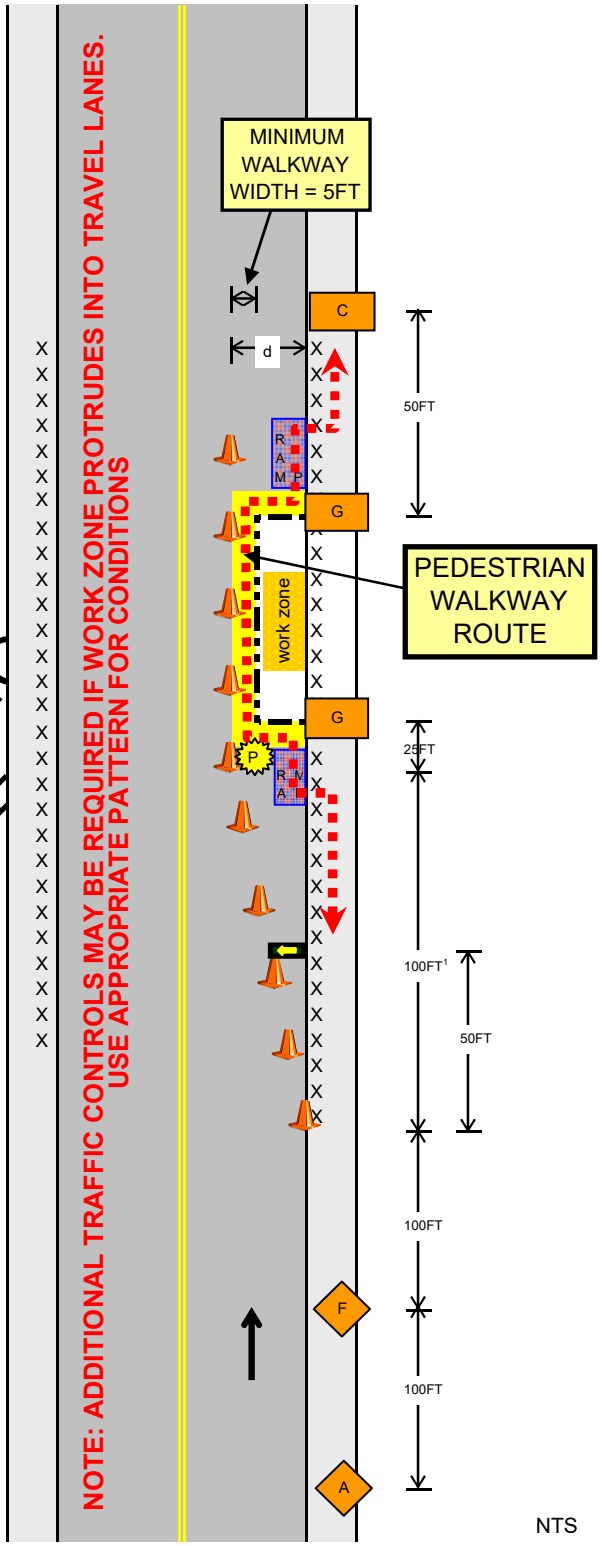
P POLICE OFFICER

RAMP ACCESSIBLE RAMP FOR PEDESTRAINS

CONSTRUCTION FENCE

X INDICATES NO PARKING (ADJUST LENGTH AS NECESSARY)

TEMPORARY PROTECTED ACCESSIBLE WALKWAY



* FLOURESCENT ORANGE SHEETING W/BLACK LETTERING

1. If d > 10 ft, use 10d

WAGE RATES

(State of Connecticut Wage Rates apply to this Project)

(The higher of the CT State or Federal Wage Rates apply)

ITEMIZED PROPOSAL

BIDDER'S CHECKLIST

The following separate documents shall be completed and submitted with each Bid:

1. Itemized Proposal (Included with this Checklist)
2. Bid Security / Bond
3. Bidder's Statement of Qualifications Form (Included with this Checklist)
4. MBE/WBE Certification and Subcontractor Verification Form (Included with this Checklist)
5. DAS Pre-qualification Certification and Pre-qualification Update Bid Statement
6. American Iron and Steel Provisions - Bidder Certification
7. Contract Arborist Certification and Qualifications
8. Independent Land Surveyor for Construction Monitoring
9. Contractor's Engineer for Designing Trench / Utility Support Systems
10. Contractor Resumes
    a. Project Manager
    b. Full-time On-site Superintendent

ITEMIZED PROPOSAL

For Constructing

PROJECT: CWF 2012-04

**Yale Campus/Trumbull Street Area Sewer Separation Project: Phase 2
Pearl Street / Lincoln Street / Bradley Street / Whitney Avenue / Sachem Street / Green Infrastructure at Various Locations,
New Haven, Connecticut**

The Contractor shall fully complete the work stipulated in the Contract Documents within FOUR HUNDRED EIGHTY-FIVE (485) 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 - twenty (120) days from the day bids are opened.

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

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

E. As a condition of the Contract Award, the successful Bidder shall provide proof, from the Connecticut Secretary of State's office, of its current authorization to do business in Connecticut. All Connecticut corporations must provide a Certificate of Good Standing from the Secretary of State's Office. All foreign (out of State) corporations shall provide a valid license to do business in Connecticut, in the form of a current Certificate of Authority from the Secretary of State's office and evidence of compliance with the bond requirements of the Connecticut Department of Revenue Services. These documents must be presented within thirty (30) days from the date of 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 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 #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
1	201.01		1	LS	CLEARING AND GRUBBING THE LUMP SUM PRICE OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
2	201.02		1	EA	REMOVAL OF EXISTING TREE (3" TO 6" CALIPER) THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
3	201.04		1	EA	REMOVAL OF EXISTING TREE (10" TO 16" CALIPER) THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
4	201.05		3	EA	REMOVAL OF EXISTING TREE (16" TO 24" CALIPER) THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
5	201.06		2	EA	REMOVAL OF EXISTING TREE (24" TO 36" CALIPER) THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
6	202.04		25	SY	REMOVAL OF CONCRETE SIDEWALK AND DRIVEWAY RAMP THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
7	205.01		14,000	CY	TRENCH EXCAVATION - EARTH THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
8	205.02		1,400	CY	TRENCH EXCAVATION - ROCK (INCLUDING REMOVAL OF CONCRETE PAVEMENT) THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
9	205.03		1,000	CY	TRENCH EXCAVATION - UNSUITABLE THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
10	205.05		400	CY	TEST PIT - CONVENTIONAL EXCAVATION THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
11	205.06		40	EA	TEST PIT - VACUUM EXCAVATION THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
12	209		5,100	SY	FORMATION OF SUBGRADE THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
13	210		1	LS	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL THE LUMP SUM PRICE OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
14	210.10		485	DAY	MECHANICAL STREET SWEEPING THE PRICE PER DAY OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
15	213		1,000	CY	GRAVEL FILL THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
16	304		1,800	CY	PROCESSED AGGREGATE BASE THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
17	217.01		3,200	CY	BEDDING MATERIAL - SELECT FILL THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
18	217.02		700	CY	BEDDING MATERIAL - 3/4" CRUSHED STONE THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
19	220		2,100	CY	CONTROLLED LOW STRENGTH MATERIAL THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
20	405.02		23,600	SY	BITUMINOUS CONCRETE MILLING (0"-2") THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
21		406.01	8,600	SY	BITUMINOUS CONCRETE OVERLAY, HMA S0.5, THICKNESS 2" THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
22		406.02	300	TON	BITUMINOUS CONCRETE SKIM COAT, HMA S0.5 THE PRICE PER TON OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
23	407.01		3,400	SY	TEMPORARY PAVEMENT TRENCH IN ROADWAYS, HMA S0.5, THICKNESS 2" THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
24	407.02				TEMPORARY PAVEMENT TRENCH IN ROADWAY (COLLECTOR), HMA S0.5, THICKNESS 4" (2 - 2" COURSES) THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			1,500	SY	($ _____)	$ _____
25	407.03				TEMPORARY PAVEMENT FOR SIDEWALK AND DRIVEWAY, HMA S0.5 ON COMPACTED TRENCH BACKFILL, THICKNESS 2", THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			100	SY	($ _____)	$ _____
26	407.10				BITUMINOUS CONCRETE TRENCH REPAIR HMA S0.5, THICKNESS 4" (2 - 2" COURSES) THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			3,400	SY	($ _____)	$ _____
27	407.11				BITUMINOUS CONCRETE TRENCH REPAIR (COLLECTOR), HMA S0.5, THICKNESS 3" (2 - 1 1/2" COURSES) THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			1,500	SY	($ _____)	$ _____
28	407.40				BITUMINOUS CONCRETE TRENCH REPAIR (COLLECTOR), HMA S1.0, THICKNESS 6" (2-3" COURSES) THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			1,500	SY	($ _____)	$ _____
29	407.42				BITUMINOUS CONCRETE (COLLECTOR), HMA S1.0, THICKNESS 9" (2-4 1/2" COURSES) THE PRICE PER SQUARE OF $ _____ DOLLARS AND _____ CENTS	
			1,500	SY	($ _____)	$ _____
30	407.60				BITUMINOUS CONCRETE COLD PATCH, THICKNESS 2" THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			300	SY	($ _____)	$ _____
31	407.70				HYBRID ASPHALT TRENCH REPAIR, THICKNESS 2" THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			300	SY	($ _____)	$ _____
32	407.80				UTIITY TRENCH COURSE (LOCAL), HMA S0.5, THICKNESS 4" (2 - 2" COURSES) THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			50	SY	($ _____)	$ _____
33	407.81				UTIITY TRENCH COURSE (COLLECTOR), HMA S0.5, THICKNESS 3" (2 - 1.5" COURSES) THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			30	SY	($ _____)	$ _____
34	407.82				UTILITY TRENCH COURSE (COLLECTOR), HMA S1.0, THICKNESS 6" (2 - 3" COURSES) THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS	
			30	SY	($ _____)	$ _____
35	512.01				SANITARY SEWER 12" PVC THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			320	LF	($ _____)	$ _____

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
36	512.03				SANITARY LATERAL REPAIR AND/OR RELOCATION, 4" AND 6" INCLUDING FITTINGS AND CHIMNEYS, THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			100	LF	($ _____)	$ _____
37	512.04				SERVICE CHIMNEYS THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			100	LF	($ _____)	$ _____
38	512.05				CONCRETE CRADLES AND ENCASEMENT THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS	
			50	CY	($ _____)	$ _____
39	512.06				SANITARY SEWER CLEAN OUT FRAME AND COVER (SD512-02) THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			5	EA	($ _____)	$ _____
40	512.07				SANITARY SEWER CLEAN OUT (SD512-03) THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			5	EA	($ _____)	$ _____
41	512.08				SANITARY SEWER BACKWATER VALVE (SD512-06) THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			5	EA	($ _____)	$ _____
39	516				TEMPORARY BYPASS PUMPING SYSTEMS THE PRICE PER LUMP SUM OF $ _____ DOLLARS AND _____ CENTS	
			1	LS	($ _____)	$ _____
40	518.01.1				SANITARY SEWER HYDRAULIC CLEANING (LIGHT) 12" VCP THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			1,200	LF	($ _____)	$ _____
41	518.01.2				SANITARY SEWER HYDRAULIC CLEANING (LIGHT) 15" VCP THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			2,100	LF	($ _____)	$ _____
42	518.01.3				SANITARY SEWER HYDRAULIC CLEANING (LIGHT) 18" X 10" RCP HORSESHOE THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			485	LF	($ _____)	$ _____
43	518.01.4				SANITARY SEWER HYDRAULIC CLEANING (LIGHT) 24" X 15" RCP EGG THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			300	LF	($ _____)	$ _____
44	518.01.5				SANITARY SEWER HYDRAULIC CLEANING (LIGHT) 32" X 24" BRICK HORSESHOE THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			1,140	LF	($ _____)	$ _____

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
45	518.02.1		150	LF	SANITARY SEWER HYDRAULIC CLEANING (HEAVY) 12" VCP THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
46	518.02.2		250	LF	SANITARY SEWER HYDRAULIC CLEANING (HEAVY) 15" VCP THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
47	518.02.3		60	LF	SANITARY SEWER HYDRAULIC CLEANING (HEAVY) 18" X 10" RCP HORSESHOE THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
48	518.02.4		40	LF	SANITARY SEWER HYDRAULIC CLEANING (HEAVY) 24" X 15" RCP EGG THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
49	518.02.5		14	LF	SANITARY SEWER HYDRAULIC CLEANING (HEAVY) 32" X 24" BRICK HORSESHOE THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
50	518.04		100	LF	LATERAL CONNECTION CLEANING THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
50	520.01.1		1,200	LF	12" VCP SANITARY SEWER CIPP LINING THE PRICE LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
51	520.01.2		2,100	LF	15" VCP SANITARY SEWER CIPP LINING THE PRICE LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
52	520.01.3		485	LF	18" X 10" RCP HORSESHOE SANITARY SEWER CIPP LINING THE PRICE LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
53	520.01.4		300	LF	24" X 15" RCP EGG SANITARY SEWER CIPP LINING THE PRICE LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
54	520.01.5		1,150	LF	32" X 24" BRICK HORSESHOE SANITARY SEWER CIPP LINING THE PRICE LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
55	520.10		160	EA	RE-ESTABLISH HOUSE SERVICE CONNECTION THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
56	520.11				CUT PROTRUDING (CLAY/PLASTIC/CAST IRON) TAPS THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			70	EA	($ _____)	$ _____
57	520.12				SEWER LATERAL / SEWER MAIN CONNECTION LINING THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			30	EA	($ _____)	$ _____
58	521.01				SANITARY SEWER POINT REPAIRS 12" VCP THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			20	LF	($ _____)	$ _____
59	521.02				SANITARY SEWER POINT REPAIRS 15" VCP THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			60	LF	($ _____)	$ _____
60	521.03				SANITARY SEWER POINT REPAIRS 32" X 24" BRICK HORSESHOE THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			40	LF	($ _____)	$ _____
61	522.01				SANITARY SEWER TELEVISION INSPECTION (</=18") THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			3,300	LF	($ _____)	$ _____
62	522.02				SANITARY SEWER TELEVISION INSPECTION (>18") THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			1,450	LF	($ _____)	$ _____
63	522.03				SANITARY SEWER LATERAL TELEVISION INSPECTION THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			50	LF	($ _____)	$ _____
64	523.01				SANITARY SEWER MANHOLE - 48" DIAMETER THE PRICE PER VERTICAL FOOT OF $ _____ DOLLARS AND _____ CENTS	
			20	VF	($ _____)	$ _____
65	523.02				STANDARD SANITARY DOGHOUSE MANHOLE - 48" DIAMETER THE PRICE PER VERTICAL FOOT OF $ _____ DOLLARS AND _____ CENTS	
			10	VF	($ _____)	$ _____
66	523.05				CONVERSION - SANITARY SEWER MANHOLE - NEW FRAME AND COVER THE PRICE EACH OF $ _____ DOLLARS AND _____ CENTS	
			33	EA	($ _____)	$ _____
67		586.01.2			CONVERT EXISTING CATCH BASIN TO OVERFLOW BASIN THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			1	EA	($ _____)	$ _____

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68		586.01.3	5	EA	CONVERT EXISTING CATCH BASIN TO INFILTRATING CATCH BASIN THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
69		586.02.1	22	EA	MANHOLE (4 FT DIAMETER) - 0' - 10' DEEP THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
70		586.02.2	17	EA	MANHOLE (5 FT DIAMETER) - 0' - 10' DEEP THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
71		586.02.3	8	EA	MANHOLE (6 FT DIAMETER) - 0' - 10' DEEP THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
72		601	50	CY	MISCELLANEOUS CONCRETE THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
73		686.01	825	LF	15" RCP STORM CULVERT THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
74		686.02	330	LF	18" RCP STORM CULVERT THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
75		686.03	930	LF	24" RCP STORM CULVERT THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
76		686.04	410	LF	30" RCP STORM CULVERT THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
77		686.05	1,250	LF	36" RCP STORM CULVERT THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
78		686.06	980	LF	42" RCP STORM CULVERT THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$
79		686.07	80	LF	18" DIP STORM CULVERT THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
80		686.08	40	LF	30" DIP STORM CULVERT THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
81		686.09	450	LF	36" DIP STORM CULVERT THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
82	714		36,500	SF	TEMPORARY SHEET PILING THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
83	715		36,500	SF	SHEET PILING MATERIAL LEFT IN PLACE THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
84		813	200	LF	GRANITE STONE CURBING THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
85		814	500	LF	RESET STONE CURBING THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
86		921.01	3,100	SF	CONCRETE SIDEWALK THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
87		921.02	500	SF	CONCRETE DRIVEWAY THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
88		921.03	1,750	SF	CONCRETE HANDICAPPED RAMP THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
89		927	100	SY	DRIVEWAY RESTORATION (BITUMINOUS CONCRETE) THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
90		942	4	TON	CALCIUM CHLORIDE FOR DUST CONTROL THE PRICE PER TON OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
91		944	100	SY	FURNISHING AND PLACING TOPSOIL 4" THICKNESS THE PRICE PER SQUARE YARD OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
92		949.10	15	EA	PLANTING PLANS (SHADE) THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
93		949.11	15	EA	PLANTING PLANS (SUN) THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
94		949.12	60	EA	APPROVED TREE (3" CALIPER) FROM CITY OF NEW HAVEN'S TREE LIST THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
95	971.1		1	LS	MAINTENANCE AND PROTECTION OF TRAFFIC THE LUMP SUM PRICE OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
96	975		1	LS	MOBILIZATION (NTE 3% OF TOTAL PRICE EXCLUDING MOBILIZATION) THE LUMP SUM PRICE OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
97	985		1	LS	PROJECT SURVEY AND STAKEOUT (INCLUDING "AS-BUILT" RED LINES) THE LUMP SUM PRICE OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
98		1111.02	100	LF	LOOP DETECTOR SAW CUT (INCLUDING ENCASED #14 STRANDED WIRE, ETC) THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
99		1208.1	240	SF	SIGN FACE - SHEET ALUMINUM THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
100		1209.05	1,300	LF	PAVEMENT MARKINGS (THERMOPLASTIC), 12" WIDE, WHITE OR YELLOW THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
101		1209.06	4,400	SF	PAVEMENT MARKINGS (THERMOPLASTIC), SYMBOLS, AND LEGENDS THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
102		1210.01	5,580	LF	PAVEMENT MARKINGS (EPOXY RESIN), 4" WIDE, WHITE OR YELLOW OR BLUE THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____
103		1210.02	2,020	LF	PAVEMENT MARKINGS (EPOXY RESIN), 12" WIDE, WHITE OR YELLOW THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS ($ _____)	$ _____

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
104		1210.03			PAVEMENT MARKINGS (EPOXY RESIN), SYMBOLS, AND LEGENDS THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS	
			3,000	SF	($ _____)	$ _____
105		1220.00			CONSTRUCTION SIGNS THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS	
			150	SF	($ _____)	$ _____
106	1500.0				UNIFORMED MUNICIPAL POLICE OFFICERS AND FLAGGER AN ALLOWANCE OF $ ONE MILLION - FOUR HUNDRED THOUSAND DOLLARS AND NO CENTS	
			1	Allow	($ $1,400,000.00)	$ 1,400,000.00
107	1505.1				SPECIAL PRECAST CONCRETE STRUCTURE No. 1 THE LUMP SUM PRICE OF $ _____ DOLLARS AND _____ CENTS	
			1	LS	($ _____)	$ _____
108	1506.1				ABANDONING PIPE IN PLACE (4" TO 10" ID) THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			200	LF	($ _____)	$ _____
109	1506.2				ABANDONING PIPE IN PLACE (12" TO 15" ID) THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			330	LF	($ _____)	$ _____
110	1506.5				REMOVAL/RESTORATION OF ELECTRICAL/TELEPHONE CONDUITS AND WIRING THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			50	LF	($ _____)	$ _____
111	1507.1				6" PVC STORM LATERAL THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			100	LF	($ _____)	$ _____
112	1507.2				10" HDPE STORM LATERAL THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			780	LF	($ _____)	$ _____
113	1507.3				12" PVC STORM LATERAL THE PRICE PER LINEAR FOOT OF $ _____ DOLLARS AND _____ CENTS	
			112	LF	($ _____)	$ _____
114	1509				FRONTIER CONDUIT AND MANHOLE THE LUMP SUM PRICE OF $ _____ DOLLARS AND _____ CENTS	
			1	LS	($ _____)	$ _____
115	1510.1				ALTER EXISTING MANHOLE, CATCH BASIN OR DROP INLET THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			3	EA	($ _____)	$ _____

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures
116	1513.1				TREE PRESERVATION THE LUMP SUM PRICE OF $ _____ DOLLARS AND _____ CENTS	
			1	LS	($ _____)	$ _____
117	1513.2				ARBORIST SUPERVISION DURING CONSTRUCTION THE LUMP SUM PRICE OF $ _____ DOLLARS AND _____ CENTS	
			1	LS	($ _____)	$ _____
118	1516				REMOVE AND RESET/REPLACE BRICK SIDEWALK THE PRICE PER SQUARE FOOT OF $ _____ DOLLARS AND _____ CENTS	
			65	SF	($ _____)	$ _____
119	1521.1				STANDARD 15' X 5' BIOSWALE WITH GRANITE CURB EDGING AND FENCING THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			22	EA	($ _____)	$ _____
120	1521.2				STANDARD BIOSWALE BUMP OUT THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			7	EA	($ _____)	$ _____
121	1521.3				BIOSWALE BUMP OUT FENCING - POST AND CHAIN WITH BASES THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			7	EA	($ _____)	$ _____
122	1521.4				REMOVAL OF EXISTING SOIL THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS	
			20	CY	($ _____)	$ _____
123	1521.5				BIOSWALE SOIL MIX THE PRICE PER CUBIC YARD OF $ _____ DOLLARS AND _____ CENTS	
			20	CY	($ _____)	$ _____
124	1586				INFILTRATING CATCH BASIN THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			74	EA	($ _____)	$ _____
125	1599				CONSTRUCTION FIELD OFFICE (MEDIUM) THE PRICE PER MONTH OF $ _____ DOLLARS AND _____ CENTS	
			30	MO	($ _____)	$ _____
126	1600.1				TEMPORARY UTILITY POLE SUPPORT THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			10	EA	($ _____)	$ _____
127	1600.2				TEMPORARY SIGNAL SPAN POLE SUPPORT THE PRICE PER EACH OF $ _____ DOLLARS AND _____ CENTS	
			2	EA	($ _____)	$ _____

Item #	GNHWPCA Spec Ref	Form 818 Spec Ref	Est Quantity	Unit	Brief Desription: Unit or Lump Sum Bid (in both words and figures)	Extended Total in Figures

TOTAL BID SUM

$ _____ Dollars

and _____ Cents $ _____

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.

Signature of Bidder _____

Printed Name _____

Name of Firm _____

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 they desire.

1. Name ofBidder_____

2. Bidder's Tax Identification Number: _____

3. Permanent Main Office Address: _____

4. When Organized: _____

5. If a Corporation, where incorporated: _____ Date of Incorporation:_____

6. If other than a Corporation or Partnership, describe Organization and name Principals:

_____

_____

_____

7. Number of years engaged in construction under present firm or trade name:_____ Number of years General Contractor _____

8. Contracts on hand:

Project Name	Owner	Arch/Engr.	Contract Amount	Contract Date	Percent Complete	Scheduled Completion

9. General character of work performed by your firm:

_____

_____

10. Percent of work normally performed with your own forces:

Trade	Percent	Trade	Percent	Trade	Percent
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

11. Have you ever failed to complete any work awarded to you? If so, where and why:

_____

_____

_____

12. Have you ever defaulted on a Contract? If so, where and why:

_____

_____

_____

13. List the more important contracts completed by you within the past 5 years:

Trade	Percent	Trade	Percent	Trade	Percent

14. List major equipment available for this contract:

15. Experience in work similar in importance to this project:

16. Background and experience of the principal members of your organization, including the officers:

Individual's Name	Construction Experience/Yrs.	Present Position Years Experience	Responsibility	Previous Position Years Experience

17. Name and background of superintendent who will have principal on-site responsibility for this project:

Individual's Name	Similar Project Experience	Dollar Value	Responsibility

18. List States and Categories in which your Organization is legally qualified to do business:

_____
_____
_____

19. Give bank and trade references:

Bank	Trade

20. Name of Bonding and Insurance Companies and Names and Addresses of Agents:

_____
_____
_____

21. Upon request by the Owner, the undersigned agrees to furnish, if being considered for award of contract for the project upon which a Bid Proposal has been submitted, within 48 hours after the Bid Opening, a current Statement of Financial Conditions, including Contractor's latest regular dated financial statement or balance sheet which must contain the following items:

    Current Assets: (Cash, joint venture accounts, accounts receivable, notes receivable, accrued interest on notes, deposits and materials and prepaid expenses), net fixed assets and other assets.

    Current Liabilities: (Accounts payable, notes payable, accrued interest on notes, provision for income taxes, advances received from owners, accrued salaries, accrued payroll taxes), other liabilities and capital (capital stock, authorized and outstanding shares par values, earned surplus).

22. 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_____ , 20 _____

_____

(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_____ , 20 _____

_____
Notary Public

My Commission Expires _____

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Clean Water Fund Memorandum (2019-003)

Disadvantaged Business Enterprise (DBE) Subcontractor Participation on Clean Water Fund (CWF) Projects for 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 CWF projects.

This memorandum supersedes the **Clean Water Fund Memorandum (2016-003)**

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 DBEs.

III. EPA REQUIREMENTS

The following clause shall be included in all construction contract documents and amendments 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:

Minority Business Enterprise (MBE): 3.0 percent
Woman Business Enterprise (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. THE SIX GOOD FAITH EFFORTS AS SPECIFICALLY DEFINED BY EPA

The Six Good Faith Efforts are required methods employed by all Connecticut Department of Energy and Environmental Protection (DEEP) CWF recipients to ensure that all DBEs have the opportunity to compete for procurements funded by DEEP financial assistance dollars. The prime contractor is expected to employ the six good faith efforts throughout the entire project to insure that the DBE percentages are maintained or exceeded in the event that one DBE subcontractor needs to be substituted for another.

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 Small Business Administration (SBA) (Federal) 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.

V. 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 (a woman who is also a member of a minority class):

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 Connecticut Department of Energy and Environmental Protection (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 Connecticut Department of Transportation (CTDOT), the detailed information page within their online database suffices as proof.

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 Connecticut General Statute 4a-60g.

2. **CTDOT** - Companies that desire to do business with CTDOT as well as the DEEP should seek CTDOT certification which will be accepted by the DEEP. DBE firms are advised that the certification process can take 90 days to complete. CTDOT will certify both in state as well as out of state firms.

3. **EPA** - In the event an entity cannot be certified by CTDOT as a DBE, that entity should seek certification with EPA. Such entities must provide EPA with evidence from CTDOT denying certification.

4. **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 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

1. Within fourteen (14) calendar days after bid opening the prime contractor (apparent low bidder) shall complete and submit two copies of the DEEP Subcontractor Verification Form along with the DBE certification for each subcontractor to the municipality. The municipality must then submit one copy of these documents to DEEP as part of the authorization to award request.

2. Once DEEP authorizes the municipality to award the contract, the prime contractor is required to submit two copies of the executed DBE subcontracts to the municipality who submits one copy to the DEEP Financial Administrator.

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

4. Should the prime contractor not meet the goals, documentation of good faith efforts will be required to be submitted to the DEEP Municipal Facilities Wastewater 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.

5. In the event that a DBE subcontractor is substituted for another during the project, two copies of the executed subcontract along with the corresponding DBE certification for the substitute are submitted to the municipality who forwards one copy of each to the DEEP Financial Administrator.

6. If additional construction costs are approved by DEEP, the prime contractor employs the good faith efforts defined above to meet the goals for the new total eligible contract amount.

VIII. DAS PREQUALIFICATION CERTIFICATION FOR DBE SUBCONTRACTORS

At time that the prime contractor submits copies of the executed DBE subcontracts to the municipality, two copies of the current DAS Prequalification Certificate for each DBE subcontractor whose subcontract value is equal to or greater than $500,000 must also be submitted. In turn, the municipality is required to submit one copy of each DBE Prequalification Certification to the DEEP Financial Administrator. Suppliers of material or products who do not do installation or construction work are not subject to the DAS Construction Contractor prequalification requirement.

IX. SUBMISSION OF THIS FORM

This form is to be signed by the contractor or the contractor's authorized representative. The form is then submitted to the municipality's representative for signature. The municipality includes the form as part of the authorization to award request to DEEP.

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 _____

Name of Prime Contractor _____
Name and Title of Authorized Officer _____
Authorized Signature _____ **Date** _____

Town Official and Title _____
Authorized Signature _____ **Date** _____

X. DEFINITIONS

CGS: Connecticut General Statutes

CTDOT: Connecticut Department of Transportation

CWF: Clean Water Fund

DAS: Connecticut Department of Administrative Services

DBE: Disadvantaged Business Enterprise

DEEP: Connecticut 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)

June 19, 2019
Date

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

Disadvantage Business Enterprise (DBE)

Subcontractor Verification Form

Note to general contractor: You are required to complete this form for each DBE (MBE or WBE) subcontractor to be employed in the completion of this contract, and submit an original of each completed form, along with each subcontractor's current, valid DBE certification, to the municipality within 14 days of bid opening. Failure to submit this form and the DBE certification within 14 days of bid opening may render your bid non-responsive and result in the rejection of your bid.

Name of subcontractor: _____

Address: _____

Contact person: _____

Phone number: _____-_____-_____ Is the subcontractor a ☐ MBE or ☐ WBE?

Type of work to be performed_____

Estimated dollar amount of subcontract: $_____

Percent of total contract _____%

Please attach a current, valid copy of the subcontractor's DBE certification form to this document.

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 the 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, and a copy of this form must be completed for the replacement subcontractor. The DBE percentages shall be maintained or exceeded in the event of one subcontractor being substituted for another.

Contract name: _____

Prime contractor company name: _____

Prime contractor authorized signature: _____ Date: _____

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