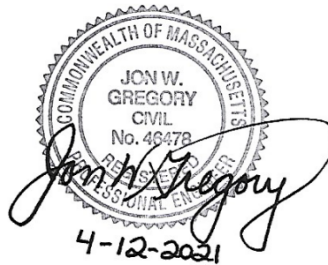


**CITY OF NEWTON
PURCHASING DEPARTMENT**

CONTRACT FOR PUBLIC WORKS



**CHESTNUT STREET PHASE II WATER MAIN
CLEANING AND LINING
*INVITATION FOR BID #21-61***

Bid Opening Date: April 29, 2021 at 10:30AM

April 2021

Ruthanne Fuller, Mayor

**CITY OF NEWTON
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CHESNUT STREET PHASE II WATER MAIN CLEANING AND LINING**

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CITY OF NEWTON
PURCHASING DEPARTMENT
INVITATION FOR BID #21-61

The City of Newton invites sealed bids in accordance with M.G.L. c.30, §39M from Contractors for:

CHESTNUT STREET PHASE II WATER MAIN CLEANING AND LINING

Bids will be received until: **10:30 a.m., April 29, 2021***
at the Purchasing Department, Room 108, Newton City Hall, 1000 Commonwealth Avenue, Newton, MA 02459. Bids will not be accepted nor may submitted bids be corrected, modified, or withdrawn after the deadline for bids. Immediately following the deadline for bids, all bids received within the time specified will be publicly opened and read aloud.

*** To promote the health and safety of City workers and the public, Newton City Hall is still observing COVID restrictions. The City has adopted the following procedures that may affect your participation in this bid:**

- 1. Bidders who wish to attend the Bid Opening can do so by telephone conference call. To attend, call 617.454.5555. When prompted, enter Participant Passcode 1220#. There will be no in person meetings.**
- 2. Bids not received in Room 108 by mail or courier may be dropped off in a locked drop box at the top of the stairs to left of the main door to City Hall. The box will be checked at the scheduled submission deadline.**
- 3. Bids results will be scanned and posted as soon as practicable after the opening. Copies of bids will be available on written request.**

Contract Documents will be available on line at www.newtonma.gov/bids or for pickup in the Purchasing Department after **10:00 a.m., April 15, 2021.**

Anticipated time for completion of this project is on or before December 31, 2021. Time is of the essence in the performance of the work of this contract. Bidder's attention is directed to the time for completion stated in the Project Manual and the provisions regarding the assessment of liquidated damages for failure to complete the work within the time specified.

Bids must be submitted with one (1) Original and two (2) Copies.

Award will be made to the responsible and eligible bidder submitting the lowest Proposed Contract Price.

Anticipated start date is estimated to be May 1, 2021. Anticipated time for completion the proposed work is December 31, 2021.

A bid deposit in an amount that is not less than five percent (5%) of the value of the bid, including all add alternates, is required. Bid deposits, payable to the City of Newton, shall be either in the form of a bid bond, or cash, or a certified check on, or a treasurer's or cashier's check issued by a responsible bank or trust company. The City of Newton will award the contract to the lowest eligible and responsible bidder. Please Note: this bid, in accordance with the Chapter 303 Acts of 2008, contains Price Adjustments and new Prevailing Wage requirements. All bidders are required to familiarize themselves with these terms and conditions before submitting a bid. Bidders are reminded that the bid deposit covers the City for damages when a bidder withdraws its bid after the bid submission date. **Be advised that to the extent permitted by the law the City will retain all bid deposits for withdrawn bids.**

All bids are subject to the provisions of M.G.L. c. 30, § 39M. **Wages are subject** to minimum wage rates determined by the Massachusetts Department of Labor and Industries pursuant to M.G.L. c. 149, § 26 to 27H. The schedule of wage rates applicable to this contract is included in the bidding documents. In addition, the prevailing wage schedule will be updated annually for all public construction projects lasting longer than one (1) year. You will be required to pay the rates set out in any updated prevailing wage schedule. Increases in prevailing wage schedules will not be the basis for change order requests. The successful bidder will be required to provide a Certificate of Insurance demonstrating current coverage of the type and amounts set forth in the Project Manual. The successful bidder will be required to furnish a **Labor and Materials Payment Bond** in the amount of **50%** of the contract total. Wages are paid to drivers for all "on-site" work.

The costs of any bond and any insurance required in this Invitation For Bid are the responsibility of the bidder; such costs will not be reimbursed by City and should be included in your bid.

Once you've downloaded this bid from the internet website (www.newtonma.gov/bids), I strongly suggest you email (purchasing@newtonma.gov) your company's Name, address, EMAIL, phone, fax AND the INVITATION FOR BID NUMBER and Project Title, so that we may add you to the Bidders List and you will be notified of any/all addendums.

The City will reject any and all bids in accordance with the above referenced General Laws. In addition, the City reserves the right to waive minor informalities in any or all bids, or to reject any or all bids (in whole or in part) if it be in the public interest to do so.

In the event that any person wishes to attend a bid opening or pre-bid meeting, accessible and reasonable accommodations will be provided to persons requiring assistance. If you need a reasonable accommodation, please contact the city of Newton's ADA Coordinator, Jini Fairley, at least two business days in advance of the meeting: jfairley@newtonma.gov or (617) 796-1253. For Telecommunications Relay Service, please dial 711.

CITY OF NEWTON

A handwritten signature in black ink that reads "Nicholas Read". The signature is written in a cursive style with a large, prominent "N" and "R".

Nicholas Read
Chief Procurement Officer
April 15, 2021

CITY OF NEWTON
DEPARTMENT OF PURCHASING
INSTRUCTIONS TO BIDDERS

ARTICLE 1 - BIDDER'S REPRESENTATION

- 1.1 Each General Bidder (hereinafter called the "Bidder") by making a bid (hereinafter called "bid") represents that:
1. The Bidder has read and understands the Bidding Documents, Contract Forms, General Conditions, Conditions of the Contract, General Requirements and Project Specifications (collectively, referred to as the "Contract Documents") and the bid is made in accordance therewith.
 2. The Bidder has visited the work site and is familiar with the work sites and local conditions under which the work has to be performed.
- 1.2 Failure to so examine the Contract Documents and become familiar with the work sites or local conditions will not relieve any Bidder from any obligation under the bid as submitted.

ARTICLE 2 - REQUEST FOR INTERPRETATION

- 2.1 Bidders shall promptly notify the City of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents, the site, and local conditions.
- 2.2 Bidders requiring clarification or interpretation of the Contract Documents shall make a written request to the *Chief Procurement Officer*, at purchasing@newtonma.gov or via facsimile (617) 796-1227. The City will only answer such requests if received by **April 23, 2021 at 12:00 noon**. In the event that the bid opening date is changed, the deadline for informational requests may also change as provided in an addendum issued by the City.
- 2.3 Interpretation, correction, or change in the Contract Documents will be made by addendum which will become part of the Contract Documents. The City will not be held accountable for any oral communication.
- 2.4 Addenda will be emailed to every individual or firm on record as having taken a set of Contract Documents. Addenda will be emailed to every individual or firm on record as having taken a set of Contract Documents. Receipt of all addenda issued must be acknowledged in the Bid Form. **YOUR FAILURE TO ACKNOWLEDGE ALL ADDENDA MAY RESULT IN YOUR BID BEING REJECTED AS NON-RESPONSIVE.**
- 2.5 Copies of addenda will be made available for inspection at the location listed in the Invitation for Bids where Contract Documents are on file, in addition to being available online at www.newtonma.gov/bids.
- 2.6 Bidders or proposers contacting ANY CITY EMPLOYEE regarding an Invitation for Bid (IFB) or a Request for Proposal (RFP), outside of the Purchasing Department, once an IFB or RFP has been released, may be disqualified from the procurement process.
- 2.7 Bidders downloading information off the internet web site are solely responsible for obtaining any addenda prior to the bid opening. If the bidder makes itself known to the Purchasing Department, at purchasing@newtonma.gov or via facsimile (617) 796-1227, it shall be placed on the bidder's list. Bidders must provide the Purchasing Department with their company's name, street address, city, state, zip, phone, fax, email address and **INVITATION FOR BID #21-61**.

ARTICLE 3 - MBE PARTICIPATION

- 3.1 Notice is hereby given that the Mayor's Affirmative Action Plan for the City of Newton in effect at the time of this solicitation is applicable to all construction contracts in excess of \$10,000.00.
- 3.2 Notice is hereby given that the City of Newton Minority/Women Business Enterprise Plan and the Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program in effect at the time of this solicitation are applicable to all City contracts for goods and services in excess of \$50,000.00.
- 3.3 Copies of the Plans and Program referred to in Sections 3.1 and 3.2 are available at: www.newtonma.gov/purchasing.

ARTICLE 4 - PREPARATION AND SUBMISSION OF BIDS

- 4.1 Bids shall be submitted on the "Bid Form 21-61," attached.
- 4.2 All entries on the Bid Form shall be made by typewriter or in ink.
- 4.3 Where so indicated on the Bid Form, sums shall be expressed in both words and figures. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control.
- 4.4 Bid Deposits shall be submitted in the amount specified in the Invitation for Bids. They shall be made payable to the City and shall be either in the form of cash, certified check, treasurer's or cashier's check issued by a responsible bank or trust company, or a bid bond issued by a surety licensed to do business in the Commonwealth of Massachusetts; and shall be conditioned upon the faithful performance by the principal of the agreements contained in the bid. Bidders are reminded that the bid deposit covers the City for damages when a bidder withdraws its bid after the bid submission date. **Be advised that to the extent permitted by the law the City will retain all bid deposits as permitted by law.**

Bid deposits of the three (3) lowest responsible and eligible Bidders shall be retained until the execution and delivery of the City-Contractor agreement.

- 4.5 The Bid, including the bid deposit shall be enclosed in a sealed envelope with the following plainly marked on the outside:

* GENERAL BID FOR: **#21-61**

* NAME OF PROJECT: **Chestnut Street Phase II Water Main Cleaning and Lining**

* BIDDER'S NAME, BUSINESS ADDRESS, AND PHONE NUMBER

- 4.6 Date and time for receipt of bids is set forth in the IFB.
- 4.7 Timely delivery of a bid at the location designated shall be the full responsibility of the Bidder. In the event that Newton City Hall is closed on the date or at the time that bids are due, the date and time for receipt of bids shall be on the next business day following that the Newton City Hall and the Purchasing Department are open.
- 4.8 Bids shall be submitted with **one original** and two **copies**.
- 4.9 Massachusetts law requires all employees who work on Massachusetts public works construction sites must have no Less than 10 hours of OSHA-approved safety and health training. See M.G.L. c.30, §39M(c), M.G.L. c.30, §39S(a)(1), M.G.L. c.149, §44E(2) & M.G.L. c.149, §44F(2).
1. This requirement will apply to any general bid or sub bid submitted.
 2. This law directs the Massachusetts Attorney General to restrain the award of construction contracts to any contractor who is in violation to this requirement and to restrain the performance of these contracts by non-complying contractors.
 3. The contractor and all subcontractors on this project must certify on the Bid Form compliance with the applicable requirement. Non-compliance with this law will disqualify the bidder.
- 4.10 The City has provided estimates for any adjustment to **Fuel** and **Liquid Asphalt** costs at **Items 84** and **85** at p. 24 below.

ARTICLE 5 - ALTERNATES

- 5.1 Each Bidder shall acknowledge alternates (if any) in Section C on the Bid Form.
- 5.2 In the event an alternate does not involve a change in the amount of the base bid, the Bidder shall so indicated by writing "No Change", or "N/C" or "0" in the space provided for that alternate.
- 5.3 Bidders shall enter on the Bid Form a single amount for each alternate which shall consist of the amount for work performed by the Contractor.
- 5.4 The low Bidder will be determined on the basis of the sum of the base bid and the accepted alternates.

ARTICLE 6 - WITHDRAWAL OF BIDS

- 6.1 Any bid may be withdrawn prior to the time designated for receipt of bids on written or electronic request. Electronic withdrawal of bids must be confirmed over the Bidder's signature by written notice postmarked on or before the date and time set for receipt of bids.
- 6.2 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids.
- 6.3 No bids may be withdrawn within sixty (60) days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

ARTICLE 7 - CONTRACT AWARD

- 7.1 The City is soliciting prices for items set forth in the Item Sheets at pp. 12-24 below. It is the City's intent to award one (1) contract to the responsive and eligible bidder offering the lowest Proposed Contract Price. A contract will be awarded within sixty (60) days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids.
- 7.2 The City reserves the right to waive minor informalities in or to reject any or all Bids if it be in the public interest to do so.
- 7.3 The City reserves the right to reject any bidder who has failed to pay any local taxes, fees, assessments, betterments, or any other municipal charge, unless the bidder has a pending abatement application or has entered into a payment agreement with the collector-treasurer.
- 7.4 As used herein, the term "lowest responsible and eligible Bidder" shall mean the Bidder (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who has met all the requirements of the invitation for bids; (3) who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (4) who, where the provisions of section eight B of chapter twenty-nine apply, shall have been determined to be qualified thereunder.
- 7.5 Subsequent to the award and within five (5) days, Saturday, Sundays and legal holidays excluded, after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the City a contract in the form included in the Contract Documents in such number of counterparts as the City may require.
- 7.6 In the event that the City receives low bids in identical amount from two or more responsive and responsible Bidders, the City shall select the successful Bidder by a blind selection process chosen by the City such as flipping a coin or drawing names from a hat. The low Bidders who are under consideration will be invited to attend and observe the selection process.

ARTICLE 8 - TAXES

- 8.1 The Bidder shall not include in this bid any tax imposed upon the sale or rental of tangible personal property in this Commonwealth, such as any and all building materials, supplies, services and equipment required to complete the work.
- 8.2 The City is exempt from payment of the Massachusetts Sales Tax, and the Bidder shall not include any sales tax on its bid. The City's exemption Number is E-046-001-404.

ARTICLE 9 – PROPRIETARY SPECIFICATIONS

- 9.1 The City has used a proprietary specification to describe the supply listed in the specifications. Such specifications are permitted under M.G.L. c. 30, §39M(b), provided that the City states in writing that use of the proprietary specification is in its best interest and that it will accept an "equal" of the item specified. An item is considered equal if (i) it is at least equal in quality, durability, appearance, strength, and design; (ii) will perform the intended function at least equally; and (iii) conforms substantially, even with deviations, to the detailed requirements contained in the specifications. In the event that the Bidder wishes to substitute an equal item, it may do so either in its bid or proposal or after the contract is awarded but before a contract is executed, it being understood that the award shall be conditioned on the Bidder providing the item originally specified or an equal item accepted by the City and identified in the contract. In no event shall the Bidder be entitled to offer, or the City obliged to consider, the substitution of an item as equal after execution of a contract. In the event the Bidder substitutes or attempts to substitute an "equal" item after that date, it shall be in breach thereof and be liable for actual and consequential damages resulting from its failure to perform as agreed. The City shall have the sole right to determine whether or not said item is equal.

- 9.2 The required determination and justification have been duly prepared, and a copy may be requested in accordance with the Massachusetts Public Records Law, M.G.L. c. 66, §10.

ARTICLE 10 – ENVIRONMENTALLY PREFERABLE PRODUCTS

- 10.1 The City encourages environmentally preferable products, i.e., products or services that have less negative or more positive effects on human health and the environment when compared with competing products or services that serve the same purpose. The city encourages bidders to describe, in the space provided on the Bid Form, the environmental attributes of its goods or services throughout the entire life-cycle, including manufacture, use and disposition. This information may include multiple environmental considerations such as natural resource use, recycled content, energy and water efficiency, greenhouse gas emissions, impact on climate change, packaging, hazardous material use, and health and safety impacts on workers, consumers and the community. If you do not currently assess such attributes, please indicate that. However you respond, the City will not take your information into account in evaluating bid proposals.
- 10.2 Bidders are encouraged also to provide information related to steps they take internally to (a) identify any positive or negative environmental attributes of products or services they offer, as specified above, and (b) insure that those attributes are being addressed as part of operations.

END OF SECTION

CITY OF NEWTON

DEPARTMENT OF PURCHASING

BID FORM #21-61

A. The undersigned proposes to supply and deliver the materials specified below in full accordance with the Contract Documents and Project Manual supplied by the City of Newton entitled:

CHESTNUT STREET PHASE II WATER MAIN CLEANING AND LINING

for the contract price specified below, subject to additions and deduction according to the terms of the specifications.

B. This bid includes addenda number(s) _____, _____, _____, _____,

C. The Proposed Contract Price is:

_____ DOLLARS (\$ _____).
(The figure inserted above shall be the Total Bid Items 1-85 at Bid Item Sheets p. 12-24.)

COMPANY: _____

D. The undersigned has completed and submits herewith the following documents:

- Bidder's Qualification and Reference Form, 2 pages
- Signed Bid Form, 2 pages
- Debarment Letter, 1 page
- IRS Form W-9, 1 page
- Bid Item Sheets, 13 pages
- Certificate of Non-Collusion, 1 page
- Certificate of Foreign Corporation, 1 page
- Certificate of Tax Compliance, 1 page
- A five percent (5%) bid deposit/bid guarantee.

E. Prompt Payment Discounts. Bidders are encouraged to offer discounts in exchange for an expedited payment. Payments may be issued earlier than the general goal of within 30 days of receipt of the invoice only when in exchange for discounted prices. Discounts will not be considered in determining the lowest responsible bidder.

Prompt Payment Discount _____% _____ Days
Prompt Payment Discount _____% _____ Days
Prompt Payment Discount _____% _____ Days

F. The undersigned agrees that, if selected as general contractor, s/he will within five days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the City of Newton, execute a contract in accordance with the terms of this bid **and furnish a labor and materials payment bond** of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the City of Newton in the **sum not less than 50% of the contract price**, the premiums for which are to be paid by the contractor and are included in the contract price.

The undersigned hereby certifies that s/he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that s/he will comply fully with all laws and regulations applicable to awards made subject to section forty-four A of M.G.L. Chapter 30, s 39M.

The undersigned certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration ("OSHA") that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States OSHA that is at least 10 hours in duration. The undersigned understands that any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

The undersigned further certifies under the penalties of perjury that they have familiarized themselves with the changes to the Prevailing Wage Rates, Price Adjustment Clauses, in accordance to Chapter 303 Acts of 2008.

G. Environmentally preferable products information (which is requested but which will not be considered in awarding a contract):

Description of environmental attributes of Bidder's goods or services:

Steps taken to (a) identify any positive or negative environmental attributes of products or services and (b) insure that those attributes are being addressed as part of operations:

Date _____

_____ (Name of General Bidder)

BY: _____

_____ (Printed Name and Title of Signatory)

_____ (Business Address)

_____ (City, State Zip)

_____/_____ (Telephone) (FAX)

_____ (E-mail Address)

NOTE: If the bidder is a corporation, indicate state of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses of all partners; if an individual, give residential address if different from business address; and, if operating as a d/b/a give full legal identity. Attach additional pages as necessary.

END OF SECTION

INSTRUCTIONS FOR BID ITEM SHEETS

The Contractor shall insert prices for each item in ink, in both words and figures, and is to show a total bid price. In the event of a discrepancy between the written words and figures, the written words shall govern. In the event an error in the bidders total bid price, the corrected total bid obtained by the summation of the products of the unit prices multiplied by the respective quantities shall stand as the bidder's total bid price.

The Contractor is required to review any related plans, conduct a full site review, and read all the provisions in the document before inserting prices, and is further advised to make his own determination as to the accuracy of the estimated quantities before inserting bid prices.

The estimated quantities (Est. Qty.) shown here are based solely upon a reasonable assessment of the project parameters. They are the City's best estimate based on prior experience. Actual quantities may be more or less than those estimated. Regardless of the amount of the actual quantities, the unit price(s) shall be that set forth in the Bidder's Item Sheets.

BID ITEM SHEETS

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
<p>ITEM: 1 – Mobilization & Demobilization</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LUMP SUM</p>	1	L.S.	\$ _____
<p>ITEM: 2 – Sawcut Bituminous Concrete Roadways</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LINEAR FEET</p>	2,500	L.F.	\$ _____
<p>ITEM: 3 – General Excavation</p> <p>THE CONTRACTOR IS TO FACTOR THE COST OF EXCAVATION INTO THE INDIVIDUAL BID PRICES AS HE DEEMS APPROPRIATE. THERE WILL BE NO SEPARATE PAYMENT FOR EXCAVATION (OR DISPOSAL COSTS)</p>	NA	NA	NA
<p>ITEM: 4 – Test Pits</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER CUBIC YARD</p>	30	C.Y.	\$ _____
<p>ITEM: 5 – Excavation Below Grade</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER CUBIC YARD</p>	15	C.Y.	\$ _____
<p>ITEM: 6 – Rock Removal</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER CUBIC YARD</p>	15	C.Y.	\$ _____
<p>ITEM: 7 – Gravel Borrow</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER TON</p>	300	TON	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
ITEM: 8 – Dense Graded Crushed Stone THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER TON	150	TON	\$ _____
ITEM: 9 – Sand for Water Service Pipe Bedding THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER TON	185	TON	\$ _____
ITEM: 10 - ¾" Fractured Crushed Stone THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER TON	10	TON	\$ _____
ITEM: 11 – Controlled Density Fill THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER CUBIC YARD	35	C.Y.	\$ _____
ITEM: 12 – Class B Cement Concrete for Encasement THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER CUBIC YARD	180	C.Y.	\$ _____
ITEM: 13 – Dust Control (Chemical Treatment) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER POUND	1,125	LB.	\$ _____
ITEM: 14 – Reset Existing Curb THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LINEAR FOOT	60	L.F.	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
ITEM: 15 – 1.5” Trench Milling and Overlay THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER TON	65	TON	\$ _____
ITEM: 16 – Seam and Crack Sealing (Applied After the Permanent Patch Operation) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER GALLON	115	GAL.	\$ _____
ITEM: 17 – 2" Bituminous Concrete Walks & Driveways (Patching Private Property) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER SQUARE YARD	65	S.Y.	\$ _____
ITEM: 18 – 3" Bituminous Concrete Walks & Driveway Aprons (Patching Public Property) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER SQUARE YARD	75	S.Y.	\$ _____
ITEM: 19 – 4" Cement Concrete Walks with Lampblack THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER SQUARE YARD	120	S.Y.	\$ _____
ITEM: 20 – 6" Cement Concrete Driveway Aprons with Lampblack THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER SQUARE YARD	15	S.Y.	\$ _____
ITEM: 21 – 4” Temporary Trench Pavement THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER TON	200	TON	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
ITEM: 22 - Cold Patch THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER TON	50	TON	\$ _____
ITEM: 23 – Regrade, Loam, & Seed (Restore Loam Borders and/or Private Yards) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER SQUARE YARD	200	S.Y.	\$ _____
ITEM: 24– Materials Testing THE SUM OF: <u>TWELVE THOUSAND</u> _____ DOLLARS <u>AND ZERO</u> _____ CENTS (\$12,000.00 _____) PER ALLOWANCE	1	ALL.	\$12,000.00
ITEM: 25 – Miscellaneous Work Allowance (Engineers Discretionary Fund) THE SUM OF: <u>THIRTY THOUSAND</u> _____ DOLLARS <u>AND ZERO</u> _____ CENTS (\$30,000.00 _____) PER ALLOWANCE	1	ALL.	\$30,000.00
ITEM: 26 – Furnish & Mount Safety & Specialty Signboards (Less the Post System) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER SQUARE FOOT	50	S.F.	\$ _____
ITEM: 27 – Furnish, Establish, & Re-Establish the Post System for Mounted Signboards THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	15	EA.	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
<p>ITEM: 28 – Safety Controls for Construction Operations (Primary Portable Traffic Control Devices)</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LUMP SUM</p>	1	L.S.	\$ _____
<p>ITEM: 29 – Allowance for Payment of Uniformed Police Officers</p> <p>THE SUM OF: <u>ONE HUNDRED FIFTEEN THOUSAND DOLLARS</u> <u>AND ZERO</u> _____ CENTS (\$115,000.00 _____) PER ALLOWANCE</p>	1	ALL.	<u>\$115,000.00</u>
<p>ITEM: 30 –Vehicle Loop Detector</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LINEAR FOOT</p>	50	L.F.	\$ _____
<p>ITEM: 31 – Locate & Exercise Existing Water Main Gates to Determine Pre-Construction Serviceability</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH</p>	15	EA.	\$ _____
<p>ITEM: 32 - Locate & Exercise Existing Hydrants to Determine Pre-Construction Serviceability</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH</p>	15	EA.	\$ _____
<p>ITEM: 33 – Access Pit, Removal, & Disposal of Water Gates or Hydrants that Lie Beyond the Project Limit</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH</p>	5	EA.	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
<p>ITEM: 34 – Access Pit, Removal, & Disposal of Obstructions Discovered During the Cleaning and Lining Operation</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH</p>	5	EA.	\$ _____
<p>ITEM: 35 – 6" D.I. Water Main (Class 52 Cement Lined & Dispose of Existing Pipe(s))</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LINEAR FOOT</p>	165	L.F.	\$ _____
<p>ITEM: 36 – 8" D.I. Water Main (Class 52 Cement Lined & Dispose of Existing Pipe(s))</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LINEAR FOOT</p>	190	L.F.	\$ _____
<p>ITEM: 37 – 12" D.I. Water Main (Class 52 Cement Lined & Dispose of Existing Pipe(s))</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LINEAR FOOT</p>	420	L.F.	\$ _____
<p>ITEM: 38 – Clean and Line Existing 12" Pipe</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LINEAR FOOT</p>	2,550	L.F.	\$ _____
<p>ITEM: 39 – 6" Fire Service</p> <p><u>THE CONTRACTOR IS TO FACTOR THE COST OF FIRE SERVICES INTO THE INDIVIDUAL BID PRICES FOR PIPE, VALVES AND FITTINGS AS HE DEEMS APPROPRIATE. THERE WILL BE NO SEPARATE PAYMENT FOR FIRE SERVICES (OR DISPOSAL COSTS).</u></p>	NA	NA	NA
<p>ITEM: 40 – 6" Water Gate Valve with Sleeve, Box, and Cover</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH</p>	6	EA.	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
<p>ITEM: 41 – 8" Water Gate Valve with Sleeve, Box, and Cover</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	6	EA.	\$ _____
<p>ITEM: 42 – 12" Water Gate Valves with Sleeve, Box, and Cover</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	11	EA.	\$ _____
<p>ITEM: 43 – 6" Insertion Valve with Sleeve, Box, and Cover</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	5	EA.	\$ _____
<p>ITEM: 44 – 8" Insertion Valve with Sleeve, Box, and Cover</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	5	EA.	\$ _____
<p>ITEM: 45 – 12" Insertion Valve with Sleeve, Box, and Cover</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	5	EA.	\$ _____
<p>ITEM: 46 – 6" Hydrant</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	6	EA.	\$ _____
<p>ITEM: 47 – Remove and Dispose or Stock Pile Hydrant</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	4	EA.	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
ITEM: 48 – 12" Bend THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	1	EA.	\$ _____
ITEM: 49 – 8" x 6" Reducer THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	5	EA.	\$ _____
ITEM: 50 – 12" x 12" Mechanical Joint Tee THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	2	EA.	\$ _____
ITEM: 51 – 12" x 8" Mechanical Joint Tee THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	6	EA.	\$ _____
ITEM: 52 – 12" x 6" Mechanical Joint Tee THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	6	EA.	\$ _____
ITEM: 53 – 6" Megalug THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	47	EA.	\$ _____
ITEM: 54 – 8" Megalug THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	35	EA.	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
ITEM: 55 – 12” Megalug THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	126	EA.	\$ _____
ITEM: 56 – 3/4" Diameter Threaded Steel Tie Rod Assembly (Complete in Place) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	100	EA.	\$ _____
ITEM: 57 – Class B Cement Concrete Anchorage and/or Thrust Block THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	50	EA.	\$ _____
ITEM: 58 – 6” Mechanical Joint Solid Sleeve or Coupling THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	5	EA.	\$ _____
ITEM: 59 – 8” Mechanical Joint Solid Sleeve or Coupling THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	5	EA.	\$ _____
ITEM: 60 – 12” Mechanical Joint Solid Sleeve or Coupling THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	31	EA.	\$ _____
ITEM: 61 – 6” Cap THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	4	EA.	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
<p>ITEM: 62 – 2” Preformed Pipe Insulation with Plastic Jacketing</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER LINEAR FOOT</p>	25	L.F.	\$ _____
<p>ITEM: 63 – Test Pit to Determine Water Service Tubing Type</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	10	EA.	\$ _____
<p>ITEM: 64 – 1” Copper Water Service Tubing</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER LINEAR FOOT</p>	685	L.F.	\$ _____
<p>ITEM: 65 – 1” Corporation</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	31	EA.	\$ _____
<p>ITEM: 66 – 1” Curb Stop & Box</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	31	EA.	\$ _____
<p>ITEM: 67 – Nominal 5/8”-1” Water Service Coupling</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER EACH</p>	31	EA.	\$ _____
<p>ITEM: 68 – 1.5” Copper Water Service Tubing</p> <p>THE SUM OF: _____ DOLLARS AND _____ CENTS</p> <p>(\$ _____) PER LINEAR FOOT</p>	85	L.F.	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
ITEM: 69 – 1.5” Corporation THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	5	EA.	\$ _____
ITEM: 70 – 1.5” Curb Stop & Box THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	5	EA.	\$ _____
ITEM: 71 – 1.25” Water Service Pipe Fitting THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	5	EA.	\$ _____
ITEM: 72 – 1.5” Water Service Pipe Fitting THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	5	EA.	\$ _____
ITEM: 73 – Temporary By-Pass Piping THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LUMP SUM	1	L.S.	\$ _____
ITEM: 74 – Pressure Test, Leakage Test, & Disinfection of Water Mains THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LUMP SUM	1	L.S.	\$ _____
ITEM: 75 – Water Sampling (by Laboratory Personnel) THE SUM OF: FIFTEEN THOUSAND _____ DOLLARS AND ZERO _____ CENTS (\$15,000.00 _____) PER ALLOWANCE	1	ALL.	\$15,000

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
ITEM: 76 – Supply & Deliver Rust & Stain Remover as Required THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER CARTON	1	CTN.	\$ _____
ITEM: 77 – Cleaning and Lining Pits THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	20	EA.	\$ _____
ITEM: 78 – Additional Cleaning and Lining Pits Beyond the Scope of Work THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	5	EA.	\$ _____
ITEM: 79 – Mismarked Main (Cleaning and Lining Trenches Only) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	5	EA.	\$ _____
ITEM: 80 – Existing Drainage Repair (All Sizes) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER LINEAR FOOT	150	L.F.	\$ _____
ITEM: 81– Silt Sacks THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	35	EA.	\$ _____
ITEM: 82 – Existing Sewer Service Repair (All Sizes) THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER EACH	25	EA.	\$ _____

ITEM DESCRIPTION & BID PRICE	Est. Qty.	Unit Measure	Total Cost
ITEM: 83 – Tree Protection THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ _____) PER _____ EACH	35	EA.	\$ _____
ITEM: 84 – Price Adjustment: Hot Mix Asphalt Mixtures THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ <u>5,000.00</u>) PER _____ ALLOWANCE	1	ALL.	\$5,000.00
ITEM: 85 – Price Adjustment: Fuel THE SUM OF: _____ DOLLARS AND _____ CENTS (\$ <u>5,000.00</u>) PER _____ ALLOWANCE	1	ALL.	\$5,000.00

TOTAL BID ITEMS 1 – 85 \$ _____
The total bid amount must be placed in paragraph “C” of the bid form.

END OF SECTION

CITY OF NEWTON

BIDDER'S QUALIFICATIONS AND REFERENCES FORM

All questions must be answered, and the data given must be clear and comprehensive. Please type or print legibly. If necessary, add additional sheet for starred items. This information will be utilized by the City for purposes of determining bidder responsiveness and responsibility with regard to the requirements and specifications of the Contract.

- 1. FIRM NAME: _____
- 2. WHEN ORGANIZED: _____
- 3. INCORPORATED? ____ YES ____ NO DATE AND STATE OF INCORPORATION: _____
- 4. IS YOUR BUSINESS A **MBE**? ____ YES ____ NO **WBE**? ____ YES ____ NO or **MWBE**? ____ YES ____ NO
- * 5. LIST ALL CONTRACTS CURRENTLY ON HAND, SHOWING CONTRACT AMOUNT AND ANTICIPATED DATE OF COMPLETION:

- * 6. HAVE YOU EVER FAILED TO COMPLETE A CONTRACT AWARDED TO YOU?
____ YES ____ NO
IF YES, WHERE AND WHY?

- * 7. HAVE YOU EVER DEFAULTED ON A CONTRACT? ____ YES ____ NO
IF YES, PROVIDE DETAILS.

- * 8. LIST YOUR VEHICLES/EQUIPMENT AVAILABLE FOR THIS CONTRACT:

- * 9. IN THE SPACES FOLLOWING, PROVIDE INFORMATION REGARDING CONTRACTS COMPLETED BY YOUR FIRM SIMILAR IN NATURE TO THE PROJECT BEING BID. A MINIMUM OF FOUR (4) CONTRACTS SHALL BE LISTED. PUBLICLY BID CONTRACTS ARE PREFERRED, BUT NOT MANDATORY.

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: \$ _____ DATE COMPLETED: _____
PUBLICLY BID? ____ YES ____ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: _____)

CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: \$ _____ DATE COMPLETED: _____
PUBLICLY BID? _____ YES _____ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: (____) _____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: \$ _____ DATE COMPLETED: _____
PUBLICLY BID? _____ YES _____ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: (____) _____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: \$ _____ DATE COMPLETED: _____
PUBLICLY BID? _____ YES _____ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: (____) _____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

10. The undersigned certifies that the information contained herein is complete and accurate and hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City in verification of the recitals comprising this statement of Bidder's qualifications and experience.

DATE: _____ BIDDER: _____

SIGNATURE: _____

PRINTED NAME: _____ TITLE: _____

END OF SECTION

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word “person” shall mean any natural person, business, partnership, corporation, union, committee club, or other organization, entity, or group or individuals.

(Signature of individual)

Name of Business

CERTIFICATE OF FOREIGN CORPORATION

The undersigned hereby certifies that it has been duly established, organized, or chartered as a corporation under the laws of:

(Jurisdiction)

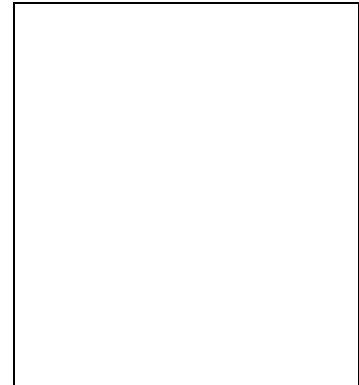
The undersigned further certifies that it has complied with the requirements of M.G.L. c. 30, §39L (if applicable) and with the requirements of M.G.L. c. 156D, §15.03 relative to the registration and operation of foreign corporations within the Commonwealth of Massachusetts.

Name of person signing proposal

Signature of person signing proposal

Name of Business (Please Print or Type)

Affix Corporate Seal here



CERTIFICATION OF TAX COMPLIANCE

Pursuant to M.G.L. c.62C, §49A and requirements of the City, the undersigned acting on behalf of the Contractor certifies under the penalties of perjury that the Contractor is in compliance with all laws of the Commonwealth relating to taxes including payment of all local taxes, fees, assessments, betterments and any other local or municipal charges (unless the Contractor has a pending abatement application or has entered into a payment agreement with the entity to which such charges were owed), reporting of employees and contractors, and withholding and remitting child support.*

**Signature of Individual (Mandatory)

*** Contractor's Social Security Number
(Voluntary) or Federal Identification Number

Print Name: _____

Date: _____

OR

Company Name
(Corporation, Partnership, LLC, etc.)

By: _____
**Corporate Officer (Mandatory)

Print Name: _____

Date: _____

* The provision in this Certification relating to child support applies only when the Contractor is an individual.

** Approval of a contract or other agreement will not be granted until the City receives a signed copy of this Certification.

*** Your social security number may be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment obligations. Providers who fail to correct their non-filing or delinquency will not have a contract or other agreement issued, renewed, or extended.

City of Newton



Mayor
Ruthanne Fuller

Purchasing Department
Nicholas Read ☎ *Chief Procurement Officer*
1000 Commonwealth Avenue
Newton Centre, MA 02459-1449
purchasing@newtonma.gov

Telephone
(617) 796-1220
Fax:
(617) 796-1227
TDD/TTY
(617) 796-1089

Date

Vendor

Re: Debarment Letter for Invitation For Bid #21-61

As a potential vendor on the above contract, the City requires that you provide a debarment/suspension certification indicating that you are in compliance with the below Federal Executive Order. Certification can be done by completing and signing this form.

Debarment:

Federal Executive Order (E.O.) 12549 “Debarment and Suspension“ requires that all contractors receiving individual awards, using federal funds, and all sub-recipients certify that the organization and its principals are not debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency from doing business with the Federal Government.

I hereby certify under pains and penalties of perjury that neither I nor any principal(s) of the Company identified below is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.

PHONE _____ FAX _____
EMAIL _____

Signature

Date

If you have questions, please contact Nicholas Read, Chief Procurement Officer at (617) 796-1220.

Request for Taxpayer Identification Number and Certification

**Give form to the
requester. Do not
send to the IRS.**

Print or type See Specific Instructions on page 2.	Name (as shown on your income tax return)	
	Business name, if different from above	
	Check appropriate box: <input type="checkbox"/> Individual/Sole proprietor <input type="checkbox"/> Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Limited liability company. Enter the tax classification (D=disregarded entity, C=corporation, P=partnership) ▶ <input type="checkbox"/> Exempt payee <input type="checkbox"/> Other (see instructions) ▶	
	Address (number, street, and apt. or suite no.)	Requester's name and address (optional)
	City, state, and ZIP code	
	List account number(s) here (optional)	

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on Line 1 to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number
OR
Employer identification number

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here	Signature of U.S. person ▶	Date ▶
------------------	----------------------------	--------

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,

CONTRACT FORMS

The awarded bidder will be required to complete and submit documents substantially similar in form to the following.

These forms may need to be modified on account of changed circumstances, and are provided for informational purposes only.

CITY - CONTRACTOR AGREEMENT

CONTRACT NO. C -

AGREEMENT made this ____ day of _____ in the year Two Thousand and Twenty-One by and between the CITY OF NEWTON, a municipal corporation organized and existing under the laws of the Commonwealth of Massachusetts, hereinafter referred to as the CITY, acting through its Chief Procurement Officer, but without personal liability to him, and hereinafter referred to as the CONTRACTOR.

The parties hereto for the considerations hereinafter set forth agree as follows:

- I. SCOPE OF WORK.** The Contractor agrees to furnish and to deliver to the City at such times, at such place or places, in such manner, and in such quantities as the City may direct, and at the unit prices quoted in the Contractor's bid the following item or items:

CHESTNUT STREET PHASE II WATER MAIN CLEANING AND LINING

- II. CONTRACT DOCUMENTS.** The Contract Documents consist of the following documents, which are either attached to this Agreement or are incorporated herein by reference:
- a. This CITY-CONTRACTOR Agreement;
 - b. The City's Invitation For Bid #21-61 issued by the Purchasing Department;
 - c. The Project Manual for **Chestnut Street Phase II Water Main Cleaning and Lining** including the Instructions to Bidders; General Conditions; Special Conditions; MWBE/AA Requirements, Wage Rate Requirements and Wage Rate Schedule(s) including any updated prevailing wage rate schedules if applicable; The Supplementary Special Conditions; General Requirements and Project Specifications; and Drawings, if included or referenced therein;
 - d. Addenda Number(s)_____;
 - e. The Bid Response of the CONTRACTOR submitted for this Project and accompanying documents and certifications;
 - f. Certificate(s) of Insurance and surety bond(s), if any, submitted by the CONTRACTOR in connection with this Project;
 - g. Duly authorized and executed Amendments, Change Orders or Work Orders issued by the CITY after execution of this CITY-CONTRACTOR Agreement.

This CITY-CONTRACTOR Agreement, together with the other documents enumerated in this Article, constitute the entire Agreement between the CITY and the CONTRACTOR. The CONTRACTOR represents that its bid was made without condition, qualification or reservation of any kind, except upon the written acknowledgement and consent of the CITY.

- III. PRIORITY OF DOCUMENTS.** In the event of inconsistency between the terms of this CITY -CONTRACTOR Agreement and the Project Manual, the terms of this Agreement shall prevail.
- IV. APPLICABLE STATUTES.** All applicable federal, state and local laws and regulations are incorporated herein by reference and the Contractor agrees to comply with same.
- V. CONTRACT TERM.** The term of this contract shall **extend from day of contract execution through December 31, 2021.**
- VI. QUANTITIES.** The quantities specified in the Project Manual are approximate and are based on previous consumption. It is specifically understood the City does not agree to purchase any specific quantity, and purchases will be made to cover actual requirements only. The City may increase or decrease the quantity of any item specified without change in price per unit of quantity as stated in the Contractor's Bid Response.

- VII. MATERIALS.** The Contractor agrees, unless otherwise specified, that all equipment, materials and supplies furnished under this contract are to be first quality, new and unused.
- VIII. AUTHORIZATION OF AND PAYMENT FOR WORK PERFORMED.** The execution of this contract does not constitute a notice to proceed or authorization to perform work or make deliveries. No work shall be commenced or deliveries made unless authorized by a written Work Order issued by the City specifying the equipment, materials, or supplies to be delivered. The Contractor will be paid following completed delivery and acceptance of the equipment, materials, or supplies ordered in accordance with the Contract. The City will use best efforts to pay within thirty (30) days of receipt of an invoice for the delivered equipment, materials, or supplies or acceptance of same whichever date is later.
- IX. CLAIMS FOR MATERIALS OR LABOR.** In the event any claims have been filed with the City for material or labor delivered or performed pursuant to this contract, the City shall be under no obligation to make any payment until such claims are adjusted to the satisfaction of the City. Any and all liens for supplies may be paid off by the City within twenty (20) days after the filing for record as provided by law of a notice of such liens, except where the claim on which the lien is filed is being litigated by the Contractor, and in such case the City may pay the amount of any final judgment or decree on any such claim. All money paid by the City in settlement of liens and claims as aforesaid, with the costs and expenses incurred by the City in connection therewith shall be charged to the Seller, bearing interest at the rate of six percent (6%) per annum, and be deducted from the next payment falling due the Seller under the terms of this contract.
- X. UNIT PRICES.** It is agreed that the unit prices listed are maximum prices and that the City shall be entitled to take advantage of any decreasing market conditions, decreases to be governed by the manufacturers' price listing as might be generally adopted in the trade, or by the same percentage that the Seller may reduce prices to others who purchase in similar quantities and under similar conditions.
- XI. RESPONSIBILITY FOR THE WORK/INDEMNIFICATION.** In the performance of any work, including the delivery of equipment, materials or supplies, pursuant to this Contract, the Contractor shall take all responsibility for the work, and shall take all precautions for preventing injuries to persons and property in or about the work and shall defend, indemnify and hold the City harmless from all loss, cost, damage or expense arising from injuries to persons or property in or about the work. The Contractor shall be responsible for any damage, which may be caused by the failure or insufficiency of any temporary works. He shall effectively protect his work and shall be liable for all damage and loss by delay or otherwise caused by his neglect or failure so to do.
- XII. WARRANTY.** Except as may be otherwise provided in the Project Manual, the Contractor shall replace, repair or make good, without cost to the City, any defects or faults arising within one (1) year after date of acceptance of equipment, materials or supplies furnished hereunder (acceptance not to be unreasonably delayed) resulting from imperfect or defective work done or materials furnished by the Contractor.
- XIII. PATENT INDEMNIFICATION.** The Contractor agrees to assume the defense of and shall indemnify and save harmless the City and all persons acting for or on behalf of it from all suits and claims against them, or any of them, arising from or occasioned by the use of any material, equipment or apparatus, or any part thereof which infringes or is alleged to infringe on any patent rights. In case such material, equipment or apparatus, or any part thereof, in any such suit is held to constitute infringement, the Contractor, within a reasonable time, shall at its own expense, and as the City may elect, replace such material, equipment or apparatus with non-infringing material, equipment or apparatus, or remove the material, equipment, or apparatus and refund the sums paid therefor.
- XIV. INSPECTION.** For the purposes of inspection of the equipment, materials and supplies covered by this contract, the Contractor shall give the City free access to his works and furnish every facility for properly inspecting such equipment, materials and supplies, and shall furnish full information, whenever requested, relating thereto. Approval by any inspector of the City shall not relieve the Contractor from his obligation to comply in all respects with the contract.
- XV. ASSIGNMENT/SUB-CONTRACTING.** The Contractor agrees that he will not sell, assign, or transfer this Contract or any part thereof or interest therein without the prior written consent of the City.
- XVI. INSTALLATION.** If any of the equipment, materials, and supplies covered by this contract is to be installed by either the Contractor or the City, the Contractor shall, upon request of the City, furnish a competent employee to supervise the installation without expense to the City, unless otherwise provided herein. Such supervisor, or other employees furnished by the Contractor, shall be the agents of the Contractor and not of the City, and the Contractor hereby agrees to indemnify the City and hold it harmless from and against any and all loss, costs, damage, and expense sustained as the result of negligence or other conduct on the part of such supervisor or employee.

XVII. TERMINATION. The City of Newton may, by written notice of default to the Contractor, terminate the whole or any part of this Contract or any Work Order issued pursuant thereto in any one of the following circumstances:

- a. If the Contractor fails to make delivery of the equipment, goods or supplies or to perform the services within the time specified herein or any extension thereof;
- b. If the Contractor fails to perform any of the other provisions of this contract or, if in the opinion of the City, Contractor so fails to make progress as to endanger performance of this contract in accordance with its terms, and in either of these two circumstances does not correct such failure within thirty (30) days (or such longer period as the City may authorize in writing) after receipt of notice from the City specifying such failure.

XVIII. GOVERNING LAW. This Contract shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts.

XIX. SEVERABILITY. The provisions of this Contract are severable. If any section, paragraph, clause or provision of this Contract shall be finally adjudicated by a court of competent jurisdiction to be invalid, the remainder of this Contract shall be unaffected by such adjudication and all of the remaining provisions of this Contract shall remain in full force and effect as though such section, paragraph, clause or provision, or any part thereof so adjudicated to be invalid, had not been included herein, unless such remaining provisions, standing alone, are incomplete and incapable of being executed in accordance with the intent of the parties to this Contract.

XX. INSURANCE REQUIREMENTS

The Contractor shall provide insurance coverage as listed below. This insurance shall be provided at the Contractor's expense and shall be in full force and effect during the full term of this Contract.

WORKER'S COMPENSATION

Worker's Compensation: Per M.G.L. c.. 149, s. 34 and c.. 152 as amended.

COMMERCIAL GENERAL LIABILITY

Personal Injury	\$500,000 each occurrence \$1,000,000 aggregate
Property Damage	\$500,000 each occurrence \$1,000,000 aggregate

VEHICLE LIABILITY

Personal Injury	\$500,000 each person \$1,000,000 aggregate
Property Damage	\$300,000 each occurrence \$500,000 aggregate

The City shall be named as additional insured on the Contractor's Liability Policies. The Contractor shall not commence the work until proof of compliance with this Section 12.0 has been furnished to the City by submitting one copy of a properly endorsed insurance certificate issued by a company authorized to write insurance in the Commonwealth. This certificate shall indicate that the contractual liability coverage is in force.

The Contractor shall file the original and one certified copy of all policies with the City within fifteen (15) days after contract award. If the City is damaged by the Contractor's failure to maintain such insurance and to so notify the City, then the Contractor shall be responsible for all reasonable costs attributable thereto.

Cancellation of any insurance required by this contract, whether by the insurer or the insured, shall not be valid unless written notice thereof is given by the party proposing cancellation to the other party and City at least thirty days prior to the effective date thereof, which shall be expressed in said notice.

XXI. AMENDMENTS TO THIS CONTRACT. This Contract may not be amended except in writing executed in the same manner as this CITY-CONTRACTOR Agreement.

IN WITNESS WHEREOF, the parties have caused this instrument to be executed under seal the day and year first above written.

CONTRACTOR

CITY OF NEWTON

By _____

By _____

Print Name _____

Chief Procurement Officer

Title _____

Date _____

Date _____

By _____

Commissioner of Public Works

Date _____

Affix Corporate Seal Here

Certified that funds are available in the following accounts:

Approved as to Legal Form and Character

By _____

Associate City Solicitor

I further certify that the Mayor, or her designee, is authorized to execute contracts and approve change orders.

Date _____

CONTRACT AND BONDS APPROVED

By _____

Comptroller of Accounts

By _____

Mayor or her designee

Date _____

Date _____

CERTIFICATE OF AUTHORITY - CORPORATE

1. I hereby certify that I am the Clerk/Secretary of _____
(insert full name of Corporation)
2. corporation, and that _____
(insert the name of officer who signed the **contract and bonds**.)
3. is the duly elected _____
(insert the title of the officer in line 2)
4. of said corporation, and that on _____
(insert a date that is **ON OR BEFORE** the date the officer signed the **contract and bonds**.)

at a duly authorized meeting of the Board of Directors of said corporation, at which all the directors were present or waived, notice, it was voted that

5. _____ the _____
(insert **name** from line 2) (insert **title** from line 3)

of this corporation be and hereby is authorized to execute contracts and bonds in the name and on behalf of said corporation, and affix its Corporate Seal thereto, and such execution of any contract of obligation in this corporation's name and on its behalf, with or without the Corporate Seal, shall be valid and binding upon this corporation; and that the above vote has not been amended or rescinded and remains in full force and effect as of the date set forth below.

6. ATTEST: _____ *AFFIX CORPORATE SEAL HERE*
(Signature of **Clerk or Secretary**)*
7. Name: _____
(Please print or type name in line 6)*
8. Date: _____
(insert a date that is **ON OR AFTER** the date the officer signed the **contract and bonds**.)

* The name and signature inserted in lines 6 & 7 **must** be that of the **Clerk or Secretary** of the corporation.

CITY OF NEWTON, MASSACHUSETTS

PAYMENT BOND

Know All Men By These Presents:

That we, _____, as PRINCIPAL, and _____, as SURETY, are held and firmly bound unto the City of Newton as Obligee, in the sum of dollars (\$_____) to be paid to the Obligee, for which payments well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the said PRINCIPAL has made a contract with the Obligee, bearing the date of _____, 2021, for the construction of _____ in Newton, Massachusetts.
(Project Title)

Now, the conditions of this obligation are such that if the PRINCIPAL and all Sub-contractors under said contract shall pay for all labor performed or furnished and for all materials used or employed in said contract and in any and all duly authorized modifications, alterations, extensions of time, changes or additions to said contract that may hereafter be made, notice to the SURETY of such modifications, alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject to, provisions of M.G.L. c.30, §39A, and M.G.L. c.149, §29, as amended, then this obligation shall become null and void; otherwise it shall remain in full force, virtue and effect.

In Witness Whereof, the PRINCIPAL and SURETY have hereto set their hands and seals this ___day of____2021.

PRINCIPAL

SURETY

BY _____

BY _____

(SEAL)

(ATTORNEY-IN-FACT) (SEAL)

(Title)

ATTEST: _____

ATTEST: _____

CITY OF NEWTON
GENERAL CONDITIONS OF THE CONTRACT
FOR PUBLIC WORKS CONSTRUCTION

ARTICLE 1

CONTRACT DRAWINGS

1. The location, general characteristics, and principal details of the work are indicated on a set Contract Drawings titled:

CHESTNUT STREET PHASE II WATER MAIN CLEANING AND LINING

DATED: April 2021

NUMBERED: Cover, C-1 thru C-5

ARTICLE 2

Definitions

The word "Commissioner" shall mean the official duly authorized to act for the City of Newton in the execution of the work of this contract, acting directly or through properly authorized agents.

The word "Engineer," or "City Engineer," shall mean the City Engineer of the City of Newton, acting directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

The word "Contractor" shall mean the party or parties contracting to perform the work covered by this contract or his, or their, legal representatives, successors or assigns.

The word "Plan" shall mean plans referred to and included in the Project Manual for this contract. The word "City" shall mean the City of Newton.

ARTICLE 3

Plans, Drawings, Profiles

1. The work shall be done in accordance with plans referred to in Article 1 and such further working and detail plans, drawings and profiles as may be furnished from time to time by the Engineer. All said plans, general and detail, are to be deemed a part of this contract, and the said plans, specifications and contract are to be considered together, so that any work mentioned in the contract, though not shown on the plans, and any work shown on the plans though not mentioned in the contract, is to be executed by the Contractor as a part of this contract. Figured dimensions are to prevail over scale. All things which in the opinion of the Engineer may fairly be inferred from the contract, plans and specifications, are to be executed by the Contractor as a part of the contract; and the Engineer shall be sole judge as to whether detail plans, drawings and profiles conform to the general plans and the contract.

Discrepancy in Plans

2. The Contractor shall carefully examine all said plans, profiles, drawings, specifications and orders; all figures, dimensions, lines, marks and scales thereof, and all directions of the Commissioner and the Engineer relating to the work, and conform to those in relation to which there is no doubt or discrepancy, but at once submit all cases of doubt or discrepancy to the Engineer for adjustment. Anything done on any part of the work for which special information or drawing should be procured, unless done in accordance with such information or drawing, or anything done in relation to which there is doubt or discrepancy, except in accordance with the adjustment thereof, or done in violation of law or public authority, is to be redone if the Commissioner shall so direct.

ARTICLE 4

Inspection

1. The Contractor in carrying on the contract shall conform to all determinations and directions of the Engineer relating to the proper interpretation of the plans, specifications, profiles or drawings, the fitness of persons employed on the work or the number thereof, or the suitability, amount, quality, and value of anything done or any materials used, and the Contractor shall permit the Commissioner and the Engineer and persons designated by them to enter upon the work and inspect the same at all times and in all places, and shall provide safe and convenient facilities for making such entry and inspection.

ARTICLE 5

Change in Plans and Work

1. The City, acting through the Commissioner and upon his written order only, from time to time given to the Contractor or his foreman, may change, increase or take away any part of the work, or change the specifications, plans, drawings, form or materials thereof. Any deduction or addition thereto is to be allowed, or paid for at a price to be determined, within not more than 15 days of the completion of the change, by the City Engineer acting in the same capacity as an architect in a building contract as between City and Contractor. Any demand for addition or deduction must be made in writing to the City Engineer within seven (7) days of the time change was ordered.

ARTICLE 6

Time and Manner of Doing the work - Beginning and Completion

1. The Contractor shall begin work upon receipt of written Notice to Proceed. Once begun the work shall be carried out in a continuous and uninterrupted fashion with sufficient workforce and resources to assure completion by the date for completion established by the Contract Documents.

2. The Contractor shall carry on the work in accordance with the requirements of law and of all other public authorities, and to the satisfaction of the Commissioner; he shall give all notices, take out all permits, pay all charges and fees, give personal supervision to the work and keep thereon a competent foreman and sufficient employees, skilled in the several parts which are given them to do.

Maintenance of Travel

3. The Contractor shall conduct his work so as to interfere as little as possible with public travel, and shall give property owners proper means of access to their property where existing access has been cut off by the work. The Contractor shall keep the streets open for through travel except where, in the opinion of the Commissioner, it is necessary to close the street. The continuous length of the street occupied for the work shall be kept as short as possible, and no part of the work shall be unnecessarily delayed. Wherever the Commissioner shall direct, trenches shall be bridged by the Contractor in a proper and secure manner so as not to interrupt travel. Free access shall be maintained at all times to all water gates, gas gates, and fire hydrants.

Abandonment of Work by Contractor

4. In the event the City Engineer certifies to the Commissioner that the work is not being so carried forward or if the Contractor at any time is not carrying on the work to the satisfaction of the Commissioner, or is not observing any of the provisions of the contract, or has abandoned the work, or become insolvent or assigned his property, the City, acting by the Commissioner and at his discretion, may, with or without notice to the Contractor, or advertising for doing the work, and by contract, day labor or otherwise, do any part of the work which the Contractor has failed to do or replace any part not done to the satisfaction of the Commissioner, or take possession of the work and complete the same, and in doing so may use any implements, machinery or materials on or about the work which are the property of the Contractor, charging the Contractor any excess cost for completing the work, which excess cost the Contractor agrees to pay.

ARTICLE 6A

Liquidated Damages

1. In case the work embraced in the contract shall not have been completed by the date stipulated therein, the Contractor shall pay to the City of Newton as liquidated damages a designated sum per calendar day for the entire period of overrun in accordance with the following Schedule of Deductions, and in addition, the Contractor shall pay without reimbursement the entire cost of all traffic officers, railroad flagmen, inspectors, or other personnel the City Engineer and/or the Chief Engineer of the railroad determines to be necessary during the period of overrun of time.

SCHEDULE OF DEDUCTIONS

Daily Charge
Per Calendar Day

\$300.00

2. Whatever sum of money may become due and payable to the City of Newton by the Contractor under this Article may be retained out of money belonging to the Contractor in the hands and possession of the City of Newton. It is agreed that this Article shall be construed and treated by the parties to the contract not as imposing a penalty upon said Contractor for failing fully to complete said work as agreed on or before the time specified in the proposal, but as liquidated damages to compensate said City of Newton for all additional costs incurred by it because of the failure of the Contractor fully to complete said work on or before the date of completion specified in the proposal.

ARTICLE 6B

Delays and Extensions of Time

1. If the Contractor is delayed at any time in the progress of the work by an act or neglect of the City, or by changes in the work ordered by the City, or by unseasonably inclement weather, or by other causes deemed by the City Engineer to be beyond the Contractor's control, and which the City Engineer determines may justify delay, then the time for completion may be extended for such reasonable time as the City Engineer may determine.

2. No such extension of time will be allowed unless the Contractor submits a written request for an extension to the City Engineer no later than 10 calendar days of the start of the occurrence or event giving rise thereto. Each such request must describe the occurrence or event and specify the manner and extent that such occurrence or event is causing or has caused a delay in the work. The City Engineer shall promptly investigate each request and make his written determination to the Commissioner and the Contractor within 10 days after receipt of the request. In his determination the City Engineer may either grant, deny, or modify the length of the requested extension.

3. If the City Engineer's determination so warrants, the Commissioner shall authorize a written Change Order to the Contract extending the time for completion. No extension of time shall be deemed as granted until said Change Order has been duly executed by the parties.

4. Change Orders which may be executed by the City and the Contractor in connection with additions, extra labor and/or extra materials shall not be considered as allowing extensions of the time for completion unless the change order expressly specifies that additional time is allowed in connection with the work under the change order. Once a Change Order has been executed by the parties, any request by the Contractor for an extension of time based solely on the fact that additions, extra labor and/or extra materials are required by the Change Order will be denied by the City Engineer.

5. Permitting the Contractor to continue and finish the work or any part of it after the times fixed for its completion, or after the date to which the time for completion may have been extended, shall in no way operate as a waiver on the part of the City of Newton of any of its rights under the contract. The Contractor remains liable for damages caused other than by delay.

ARTICLE 7

Lines and Grades

1. The Contractor shall retain a Registered Land Surveyor who shall furnish such boards and stakes and cause to be placed thereon, such lines, marks and directions relating to the work as the Commissioner or City Engineer shall from time to time direct.

ARTICLE 8

Public Service Pipes and Conduits

1. The Contractor shall maintain such pipes or conduits of public service corporations or of the City as are across or within the lines of the work until such time as said public service corporations or the City assume the maintenance or removal of said pipes or conduits. The Commissioner will notify such public service corporations to that effect on the existence of such obstructions to the work being brought to his notice by the Contractor. The City will relocate either temporarily or permanently all water mains and water service pipes, or hydrants, and drains or sewers which may interfere with the work contemplated in this contract. (This clause is not to be construed as applying to such pipes as may be readily supported and protected during the progress of the work.) The cost of shutting off and turning on water in water mains during blasting shall be assumed by the City.

Protection of Existing Structures

2. All existing gas pipes, water pipes, sewers, drains, conduits, or other structures which are uncovered by the excavation shall be carefully supported and protected from injury by the Contractor, and, in case of injury, they shall be restored by him, without compensation therefor, to as good condition as that in which they were found, and shall be kept in repair until 6 months after the completion of the work. The Contractor shall provide suitable temporary channels for water at all water courses. Wherever the work passes under or adjacent to street railway tracks, the Contractor shall make all necessary arrangements with the railway company for doing any work which may affect the property of the company or interfere with the operating of the railway, and he shall be liable for any damage that may be caused by any act, omission or neglect on his part, and shall pay all expenses of every kind incidental to this work.

Changing the Location of Existing Structures

3. Whenever it becomes necessary to change the location of any water or gas pipes, sewers, drains, conduits or other structures not otherwise provided for in these specifications, the Contractor shall do the whole or such portions of the work of making such changes as the Commissioner may require, and shall receive in payment therefor the reasonable cost of the work done as determined by the Commissioner plus 15 per cent of such cost. In estimating such cost, no allowance shall be made to the Contractor for the use of tools not especially provided for this work, for general superintendence, or for any overhead expenses except liability insurance.

ARTICLE 9

Co-operation with Other Contractors

1. The Contractor shall conduct the work in such manner as not to interfere with other work being done by the City, by contract or otherwise, and if deemed necessary by the Commissioner, the work under this contract shall conform to the progress of said other work; shall co-operate with other contractors or employees who may be doing work for the City, and with public service corporations affected by the work, in arranging for storage places, connections, bracings, temporary support for structures, repairs, etc.

ARTICLE 10

Subcontracts

1. The Contractor, in any contract with a Subcontractor, shall provide that the Subcontractor shall be subject to all specifications, terms, provisions, conditions, requirements and liabilities set forth in this contract so far as such specifications, terms, provisions, conditions, requirements and liabilities are applicable to the work to be done under such Subcontract, and shall also provide that such Subcontract shall be terminated by the Contractor whenever the Commissioner shall certify to him in writing that in his opinion the work of the Subcontractor is unnecessarily or unreasonably delayed or that the Subcontractor has violated any of the provisions of this contract. The Contractor shall at once terminate such subcontract if the Commissioner, after certifying as aforesaid, shall in writing direct the Contractor to make such termination.

2. Subcontracts shall be made in writing and the Contractor shall furnish the Commissioner with a copy of his subcontracts on demand.

3. Pursuant to the provisions of M.G.L. Ch. 30, Sec. 39F (1), the following provisions are included in the General Conditions:

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring the payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of the subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each

such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority, the demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of the completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after which the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work (ii) specified in any court proceedings barring such payment, or, (iii) if the reply shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

ARTICLE 11

Compensation for Work

1. Subject to any provisions in Paragraph 7, the price named in the proposal and accepted by the City shall be paid by the City and received by the Contractor as full compensation for furnishing materials and for use of tools, forms, machinery and other implements, and for labor in moving materials and executing all the work contemplated in this contract, also for loss or damage arising from delay however occasioned, or out of the nature of the work aforesaid or from the action of the elements, from floods, or from any unforeseen obstructions or difficulties which may be encountered in the prosecution of the same and for all risks of every description connected with the work and for well and faithfully completing the work in the proper manner and according to the plans and specifications and requirements of the Commissioner under them.

2. During the first week of each calendar month, the City Engineer shall cause all work done by the Contractor during the previous month to be measured and shall estimate the value thereof and, on or before the 10th of each month issue a certificate to the Commissioner of the measurements and the amount due the Contractor according to the terms of his contract.

3. The City shall pay the Contractor on approval of the Commissioner monthly on or before the 18th of each month for all work done during the preceding month according to the aforementioned certificate of the City Engineer, less 5 per cent of the amount of such work and less any amounts due the City by the Contractor.

4. Within ten days after the completion of the work as determined by the Commissioner, the City Engineer shall issue to the Commissioner a final certificate of the total amount of work done and the money due the Contractor therefor, crediting thereon the amounts of the previous payments. In making the final certificate, the City Engineer shall not be bound by any preceding certificate or estimate of the amount of work done or materials furnished.

Final Payment--Claims Against Contractor

5. At the expiration of 65 days after the completion of the work as determined by the Commissioner, the City shall, unless claims are made or notice of liability against the City is given, pay the Contractor, on the approval of the Commissioner, the percentages retained and the balance due the Contractor according to the aforementioned final certificate of the City Engineer less any indebtedness of the Contractor to the City. If a claim or claims are made, or notice of liability given, such amounts due the Contractor may be paid upon satisfaction of such claims or upon furnishing of indemnity to said City against all loss, cost, damage or expense by reason of such claims. In the event of no known claims or liens the City may, at its option, pay within 35 days.

6. The City, on making any payment after the completion of the work, shall be released from all claim or liability to the Contractor for anything done or used, or for any loss or injury sustained in carrying on the contract, or for any act, omission, neglect or mistake of the City or any person relating to or affecting the contract, except for the balance of any sum retained as aforesaid.

Extra Work

7. The Contractor shall be paid for any additions, or deductions as provided in Article 5, paragraph 1, and for extra labor done by, and for extra materials furnished by him in compliance with the written order only of the Commissioner, calling for work not similar in character to that covered by the items given in the proposal, and for which no price is set in the said written order, the direct (not including consequential) cost to the Contractor, as determined to be reasonable by the Commissioner, plus fifteen per cent of said costs as so determined in regard to labor only. For teams or trucks so furnished, no payment shall be made to the Contractor beyond the current local rate as determined by the Commissioner in each case. The direct cost of labor may include the cost of mechanics and laborers furnished and a reasonable proportion of the time of the foreman and timekeeper, but it shall in no case include any charge for the use of tools, for establishment charges or for time spent by the Contractor. The actual cost of insurance on extra pay rolls and of materials furnished for extra work, shall be paid without any addition. The labor and materials so ordered shall constitute a part of the work to be done under the contract; and all and singular the provisions of the contract shall apply to said labor and materials as if the same were specified therein. The Contractor shall have no claim for the above mentioned extra labor and materials unless he furnishes the details and bills therefor within one week after doing any such labor or furnishing any such materials.

8. No claim of the Contractor against the City under this contract shall be deemed valid unless such claim is presented to the Commissioner within ten days from the time when the Contractor first knows of, or has opportunity to know of, the facts and circumstances on which such claim is based.

9. A payment or payments to the Contractor, in cases where these provisions or any of them, are not complied with, shall not be construed as a waiver of said provisions or any part thereof.

Contract Made Subject to Appropriations

10. This contract is made subject to appropriation heretofore made and shall not be altered unless the Contractor, the sureties on the bond, if any, the officer making the contract and the Mayor shall in writing agree thereto.

ARTICLE 12

Responsibility for Work--Contractor's Responsibility

1. The Contractor has made his proposal from his own examinations and estimates, and shall not hold the City, its agents, or employees, responsible for or bound by, any schedule, estimate, sounding, boring, or any plan of any part of the work; shall, if any error in any plan, drawing, specification or direction relating to anything to be done under the contract come to his knowledge, report it at once to the Commissioner; shall not, except as the Commissioner shall authorize in writing, assign or sublet any part of the contract except for the supply of materials and plant, or of anything to be done thereunder; shall, subject to the provisions of the contract take all responsibility of, and bear all losses resulting to him in carrying on the contract, and shall assume the defense of, and hold the City, its agents and employees harmless from all suits and claims against them, or any of them, arising from the use of any invention, patent or patent right, material, labor or implement, by or from any act or omission or neglect of the Contractor, his

Subcontractor, his agents or employees, in carrying on the contract, or for any liability of any nature arising under the contract. The Contractor shall be solely responsible and liable for, and shall fully protect and indemnify the City against all claims for damages to persons or property occasioned by or resulting from blasting or other methods or processes in the work of construction, whether such damages be attributable to negligence of the Contractor, his employees or his Subcontractor or otherwise.

ARTICLE 13 LIGHTS--GUARDS

1. The Contractor shall assume all responsibilities of the work and take all proper precautions to protect persons and property from injury and unnecessary interference; leave a reasonably unobstructed way along public and private places for pedestrians, teams, and vehicles, and for access to hydrants; provide proper walks over or around any obstruction made in a public or private place in carrying on the contract, and maintain from the beginning of twilight through the whole of every night, on or near the obstruction sufficient lights and guards to protect travelers from injury thereby, and if, after one notification from the Commissioner that said lights and guards are not sufficient, the Contractor has not placed additional lights and guards to the satisfaction of the Commissioner, the Commissioner shall have the right to take charge of that part of the work at the expense of the Contractor. While the work is suspended he shall keep all roadways and sidewalks in proper condition, and when the work is completed put the place and vicinity in proper condition and so leave them.

The Contractor shall provide proper means of access to property where the existing access is cut off by the Contractor and replace or put in good condition every conduit, catch-basin, tree, wall, fence, or other thing injured by the Contractor in carrying on the contract, unless the same has been permanently done away with, on approval of the Commissioner, as being necessary to the proper carrying on of the contract.

ARTICLE 14 Guaranty

1. Any settlement or other defect, or the failure of any part of the structure or the work due to defective materials or workmanship, that occurs within one year after the work is completed, is to be immediately repaired by the Contractor. In the event of any such settlement, defect, or failure causing liability to the City for damage to persons or property, the Contractor does by this clause agree to hold the City harmless and to assume the defense of any claims therefor.

2. Responsibility under this guaranty for the adequacy of the work does not relieve the Contractor of his obligation to comply with the terms of the contract and to conform to all the requirements of the plans and specifications, nor does it give him the right to deviate in any way from the details of design of the structure or the work.

ARTICLE 15 Defective Work and Materials

1. The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill his contract as herein described, and defective work shall be made good and unsuitable materials may be rejected, notwithstanding that such work and materials have been previously overlooked by the Engineer and accepted or estimated for payment. If the work or materials, or any part thereof shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good such defect in a manner satisfactory to the Engineer, and if any material brought upon the ground for use in the work or selected for the same, shall be condemned by the Engineer as unsuitable or not in conformity with the specifications, the Contractor shall forthwith remove such materials from the vicinity of the work. Nothing in this contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the work or the soil, but all materials shall, upon being so attached or affixed, become the property of the City of Newton.

ARTICLE 16 Employment of Labor

1. The Contractor shall give preference in employment, first to citizens of Massachusetts, second, to other citizens of the United States; and shall allow all employees on said work to lodge, board and trade where they choose, and shall not obstruct any other person in doing work for the City; and shall conform to all labor laws of the Commonwealth; and no laborer or teamster, workman or mechanic working within this Commonwealth in the employ of the Contractor or Subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by the Contractor shall be requested to, or required to, or work more than eight hours in any one calendar day. This contract is subject to all the laws of the Commonwealth, and ordinances of the City and if any clause thereof does not conform to such laws and ordinances, such clause shall be void and such laws and ordinances operated in lieu thereof.

ARTICLE 17

Laws and Regulations--Contractor to Comply with Law

1. The Contractor shall keep fully informed of all existing or future acts of the legislature, and of all municipal ordinances, prohibitions, rules and regulations in any manner affecting the conduct of the work, and of all orders or decrees of anybody or tribunal having any jurisdiction or authority over the materials, times, places and actions of those employed in the work embraced in the contract. The Contractor shall at all times observe and comply with all existing and future acts, ordinances, prohibitions, rules, regulations, orders and decrees; and shall protect and indemnify the city and its employees against any and all claims arising from or based on any violation of such acts, ordinances, prohibitions, rules, regulations, orders or decrees, and against all violations of law by the Contractor or his agents or employees.

END OF SECTION

CITY OF NEWTON

WAGE RATE REQUIREMENTS

1. GENERAL

- A. This section summarizes the requirements for the payment of wages to laborers and mechanics employed under the Contract.
- B. Other duties and requirements of law which may not be specified in this section apply and are inherently a part of the Contract.

2. WAGE RATES

- A. The rate per hour to be paid to mechanics, apprentices, teamsters, chauffeurs, and laborers employed on the Work shall not be less than the rate of wages in the attached "Minimum Wage Rates" as determined by the Commissioner of Labor and Industries. This schedule shall continue to be the minimum rate of wages for said employees during the life of this Contract.
- B. Keep posted on the site a legible copy of said schedule. Keep on file the wage rates and classifications of labor employed on this Work in order that they may be available for inspection by the Owner, Administrator, or the Architect.
- C. Apprentices employed pursuant to this determination of wage rates must be registered and approved by the State Apprenticeship Council wherever rates for journeymen or apprentices are not listed.
- D. Pay reserve police officers employed on the Work the prevailing rate of wages paid to regular police officers as required by M.G.L. c149, Sec. 34B, as amended. Such police officers shall be covered by Workmen's Compensation Insurance and Employers Liability Insurance by the Contractor.
- E. **The Contractor and all subcontractors shall, on a weekly basis throughout the term of the contract, provide to the City of Newton certified payroll affidavits verifying compliance with M.G.L. c.149, Sec. 27, 27A and 27B.** The Contractor is obligated to provide such records to the City directly on a weekly basis. The City may assess a penalty of \$100 for each day beyond the required submission date that such records are received, which amount shall be deducted from any amounts to the Contractor from the City. In the event of chronic late submissions, the City shall report the same to the Office of the Attorney General.
- F. The Contractor and all subcontractors shall provide a Statement of Compliance within 15 days of the completion of its portion of the work. This statement shall be submitted to the Owner on the form found elsewhere in this section.
- G. The Contractor shall maintain accurate and complete records, including payroll records, during the Contract term and for three years thereafter.

END OF SECTION



CHARLES D. BAKER
Governor

KARYNE E. POLITO
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

As determined by the Director under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H

ROSALIN ACOSTA
Secretary
MICHAEL FLANAGAN
Director

Prevailing Wage Rates

Awarding Authority: City of Newton
Contract Number: IFB #21-61 **City/Town:** NEWTON
Description of Work: Chestnut Street Phase II Water Main Cleaning & Lining;
Work includes construction, cleaning & lining of water main and associated valves, fittings, hydrants, water services & temporary by-pass piping
Job Location: Chestnut (Beacon to Comm Ave)

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
 - An Awarding Authority must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c. 149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
 - The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
 - All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.**
 - The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
 - Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
 - Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
 - Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
 - Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
-

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2020	\$36.25	\$12.91	\$14.82	\$0.00	\$63.98
	06/01/2021	\$37.05	\$12.91	\$14.82	\$0.00	\$64.78
	08/01/2021	\$37.05	\$13.41	\$14.82	\$0.00	\$65.28
	12/01/2021	\$37.05	\$13.41	\$16.01	\$0.00	\$66.47
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2020	\$36.32	\$12.91	\$14.82	\$0.00	\$64.05
	06/01/2021	\$37.12	\$12.91	\$14.82	\$0.00	\$64.85
	08/01/2021	\$37.12	\$13.41	\$14.82	\$0.00	\$65.35
	12/01/2021	\$37.12	\$13.41	\$16.01	\$0.00	\$66.54
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2020	\$36.44	\$12.91	\$14.82	\$0.00	\$64.17
	06/01/2021	\$37.24	\$12.91	\$14.82	\$0.00	\$64.97
	08/01/2021	\$37.24	\$13.41	\$14.82	\$0.00	\$65.47
	12/01/2021	\$37.24	\$13.41	\$16.01	\$0.00	\$66.66
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.65	\$8.60	\$17.32	\$0.00	\$66.57
	06/01/2021	\$41.67	\$8.60	\$17.32	\$0.00	\$67.59
	12/01/2021	\$42.68	\$8.60	\$17.32	\$0.00	\$68.60
	06/01/2022	\$43.68	\$8.60	\$17.32	\$0.00	\$69.60
	12/01/2022	\$44.68	\$8.60	\$17.32	\$0.00	\$70.60
	06/01/2023	\$45.68	\$8.60	\$17.32	\$0.00	\$71.60
	12/01/2023	\$46.93	\$8.60	\$17.32	\$0.00	\$72.85
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2020	\$40.65	\$8.60	\$17.32	\$0.00	\$66.57
	06/01/2021	\$41.67	\$8.60	\$17.32	\$0.00	\$67.59
	12/01/2021	\$42.68	\$8.60	\$17.32	\$0.00	\$68.60
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2020	\$38.10	\$12.80	\$9.45	\$0.00	\$60.35
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	12/01/2023	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.98	\$13.50	\$15.70	\$0.00	\$79.18
	06/01/2021	\$51.08	\$13.50	\$15.70	\$0.00	\$80.28
	12/01/2021	\$52.23	\$13.50	\$15.70	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Issue Date: 04/06/2021

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.98	\$13.50	\$15.70	\$0.00	\$79.18
	06/01/2021	\$51.08	\$13.50	\$15.70	\$0.00	\$80.28
	12/01/2021	\$52.23	\$13.50	\$15.70	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.65	\$8.60	\$17.32	\$0.00	\$66.57
	06/01/2021	\$41.67	\$8.60	\$17.32	\$0.00	\$67.59
	12/01/2021	\$42.68	\$8.60	\$17.32	\$0.00	\$68.60
	06/01/2022	\$43.68	\$8.60	\$17.32	\$0.00	\$69.60
	12/01/2022	\$44.68	\$8.60	\$17.32	\$0.00	\$70.60
	06/01/2023	\$45.68	\$8.60	\$17.32	\$0.00	\$71.60
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2020	\$40.65	\$8.60	\$17.32	\$0.00	\$66.57
	06/01/2021	\$41.67	\$8.60	\$17.32	\$0.00	\$67.59
	12/01/2021	\$42.68	\$8.60	\$17.32	\$0.00	\$68.60
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2020	\$46.10	\$7.07	\$17.98	\$0.00	\$71.15

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
2	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
3	70	\$32.27	\$7.07	\$12.59	\$0.00	\$51.93
4	75	\$34.58	\$7.07	\$13.49	\$0.00	\$55.14
5	80	\$36.88	\$7.07	\$14.38	\$0.00	\$58.33
6	85	\$39.19	\$7.07	\$15.29	\$0.00	\$61.55
7	90	\$41.49	\$7.07	\$16.18	\$0.00	\$64.74
8	95	\$43.80	\$7.07	\$17.09	\$0.00	\$67.96

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (NEWTON)</i>	02/01/2021	\$55.75	\$11.39	\$22.09	\$0.00	\$89.23
	08/01/2021	\$57.15	\$11.39	\$22.25	\$0.00	\$90.79
	02/01/2022	\$57.74	\$11.39	\$22.25	\$0.00	\$91.38

Issue Date: 04/06/2021

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARPENTER	03/01/2021	\$43.54	\$9.40	\$18.95	\$0.00	\$71.89
CARPENTERS-ZONE 2 (Eastern Massachusetts)	09/01/2021	\$44.19	\$9.40	\$18.95	\$0.00	\$72.54
	03/01/2022	\$44.79	\$9.40	\$18.95	\$0.00	\$73.14
	09/01/2022	\$45.44	\$9.40	\$18.95	\$0.00	\$73.79
	03/01/2023	\$46.04	\$9.40	\$18.95	\$0.00	\$74.39

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.77	\$9.40	\$1.73	\$0.00	\$32.90
2	60	\$26.12	\$9.40	\$1.73	\$0.00	\$37.25
3	70	\$30.48	\$9.40	\$13.76	\$0.00	\$53.64
4	75	\$32.66	\$9.40	\$13.76	\$0.00	\$55.82
5	80	\$34.83	\$9.40	\$15.49	\$0.00	\$59.72
6	80	\$34.83	\$9.40	\$15.49	\$0.00	\$59.72
7	90	\$39.19	\$9.40	\$17.22	\$0.00	\$65.81
8	90	\$39.19	\$9.40	\$17.22	\$0.00	\$65.81

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.10	\$9.40	\$1.73	\$0.00	\$33.23
2	60	\$26.51	\$9.40	\$1.73	\$0.00	\$37.64
3	70	\$30.93	\$9.40	\$13.76	\$0.00	\$54.09
4	75	\$33.14	\$9.40	\$13.76	\$0.00	\$56.30
5	80	\$35.35	\$9.40	\$15.49	\$0.00	\$60.24
6	80	\$35.35	\$9.40	\$15.49	\$0.00	\$60.24
7	90	\$39.77	\$9.40	\$17.22	\$0.00	\$66.39
8	90	\$39.77	\$9.40	\$17.22	\$0.00	\$66.39

Notes:
 % Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$30.72/ 3&4 \$36.75/ 5&6 \$55.37/ 7&8 \$61.45

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME	04/01/2021	\$27.87	\$7.21	\$5.80	\$0.00	\$40.88
CARPENTERS-ZONE 2 (Wood Frame)	04/01/2022	\$28.62	\$7.21	\$5.80	\$0.00	\$41.63
	04/01/2023	\$28.97	\$7.21	\$5.80	\$0.00	\$41.98

All Aspects of New Wood Frame Work

Issue Date: 04/06/2021

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Classification Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Wood Frame) - Zone 2

Effective Date - 04/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$16.72	\$7.21	\$0.00	\$0.00	\$23.93
2	60	\$16.72	\$7.21	\$0.00	\$0.00	\$23.93
3	65	\$18.12	\$7.21	\$2.00	\$0.00	\$27.33
4	70	\$19.51	\$7.21	\$2.00	\$0.00	\$28.72
5	75	\$20.90	\$7.21	\$5.80	\$0.00	\$33.91
6	80	\$22.30	\$7.21	\$5.80	\$0.00	\$35.31
7	85	\$23.69	\$7.21	\$5.80	\$0.00	\$36.70
8	90	\$25.08	\$7.21	\$5.80	\$0.00	\$38.09

Effective Date - 04/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$17.17	\$7.21	\$0.00	\$0.00	\$24.38
2	60	\$17.17	\$7.21	\$0.00	\$0.00	\$24.38
3	65	\$18.60	\$7.21	\$2.00	\$0.00	\$27.81
4	70	\$20.03	\$7.21	\$2.00	\$0.00	\$29.24
5	75	\$21.47	\$7.21	\$5.80	\$0.00	\$34.48
6	80	\$22.90	\$7.21	\$5.80	\$0.00	\$35.91
7	85	\$24.33	\$7.21	\$5.80	\$0.00	\$37.34
8	90	\$25.76	\$7.21	\$5.80	\$0.00	\$38.77

Notes:
 % Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$19.75/ 3&4 \$24.54/ 5&6 \$32.52/ 7&8 \$35.31
 Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING 01/01/2020 \$49.07 \$12.75 \$22.41 \$0.62 \$84.85
 BRICKLAYERS LOCAL 3 (NEWTON)

Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Newton)

Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$12.75	\$15.41	\$0.00	\$52.70
2	60	\$29.44	\$12.75	\$17.41	\$0.62	\$60.22
3	65	\$31.90	\$12.75	\$18.41	\$0.62	\$63.68
4	70	\$34.35	\$12.75	\$19.41	\$0.62	\$67.13
5	75	\$36.80	\$12.75	\$20.41	\$0.62	\$70.58
6	80	\$39.26	\$12.75	\$21.41	\$0.62	\$74.04
7	90	\$44.16	\$12.75	\$22.41	\$0.62	\$79.94

Notes:
 Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.
 Apprentice to Journeyworker Ratio:1:3

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR LABORERS - ZONE 1	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	12/01/2023	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4	12/01/2020	\$50.98	\$13.50	\$15.70	\$0.00	\$80.18
	06/01/2021	\$52.08	\$13.50	\$15.70	\$0.00	\$81.28
	12/01/2021	\$53.23	\$13.50	\$15.70	\$0.00	\$82.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 4	12/01/2020	\$33.00	\$13.50	\$15.70	\$0.00	\$62.20
	06/01/2021	\$33.75	\$13.50	\$15.70	\$0.00	\$62.95
	12/01/2021	\$34.54	\$13.50	\$15.70	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 2	01/01/2021	\$52.06	\$8.25	\$22.75	\$0.00	\$83.06

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$8.25	\$0.00	\$0.00	\$34.28
2	55	\$28.63	\$8.25	\$6.16	\$0.00	\$43.04
3	60	\$31.24	\$8.25	\$6.72	\$0.00	\$46.21
4	65	\$33.84	\$8.25	\$7.28	\$0.00	\$49.37
5	70	\$36.44	\$8.25	\$19.39	\$0.00	\$64.08
6	75	\$39.05	\$8.25	\$19.95	\$0.00	\$67.25
7	80	\$41.65	\$8.25	\$20.51	\$0.00	\$70.41
8	90	\$46.85	\$8.25	\$21.63	\$0.00	\$76.73

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 1	12/01/2020	\$40.05	\$8.60	\$17.32	\$0.00	\$65.97
	06/01/2021	\$41.07	\$8.60	\$17.32	\$0.00	\$66.99
	12/01/2021	\$42.08	\$8.60	\$17.32	\$0.00	\$68.00
	06/01/2022	\$43.08	\$8.60	\$17.32	\$0.00	\$69.00
	12/01/2022	\$44.08	\$8.60	\$17.32	\$0.00	\$70.00
	06/01/2023	\$45.08	\$8.60	\$17.32	\$0.00	\$71.00
	12/01/2023	\$46.33	\$8.60	\$17.32	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2020	\$41.05	\$8.60	\$17.32	\$0.00	\$66.97
	06/01/2021	\$42.07	\$8.60	\$17.32	\$0.00	\$67.99
	12/01/2021	\$43.08	\$8.60	\$17.32	\$0.00	\$69.00
	06/01/2022	\$44.08	\$8.60	\$17.32	\$0.00	\$70.00
	12/01/2022	\$45.08	\$8.60	\$17.32	\$0.00	\$71.00
	06/01/2023	\$46.08	\$8.60	\$17.32	\$0.00	\$72.00
	12/01/2023	\$47.33	\$8.60	\$17.32	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.80	\$8.60	\$17.32	\$0.00	\$66.72
	06/01/2021	\$41.82	\$8.60	\$17.32	\$0.00	\$67.74
	12/01/2021	\$42.83	\$8.60	\$17.32	\$0.00	\$68.75
	06/01/2022	\$43.83	\$8.60	\$17.32	\$0.00	\$69.75
	12/01/2022	\$44.83	\$8.60	\$17.32	\$0.00	\$70.75
	06/01/2023	\$45.83	\$8.60	\$17.32	\$0.00	\$71.75
	12/01/2023	\$47.08	\$8.60	\$17.32	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 1</i>	12/01/2020	\$41.05	\$8.60	\$17.32	\$0.00	\$66.97
	06/01/2021	\$42.07	\$8.60	\$17.32	\$0.00	\$67.99
	12/01/2021	\$43.08	\$8.60	\$17.32	\$0.00	\$69.00
	06/01/2022	\$44.08	\$8.60	\$17.32	\$0.00	\$70.00
	12/01/2022	\$45.08	\$8.60	\$17.32	\$0.00	\$71.00
	06/01/2023	\$46.08	\$8.60	\$17.32	\$0.00	\$72.00
	12/01/2023	\$47.33	\$8.60	\$17.32	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.80	\$8.60	\$17.32	\$0.00	\$66.72
	06/01/2021	\$41.82	\$8.60	\$17.32	\$0.00	\$67.74
	12/01/2021	\$42.83	\$8.60	\$17.32	\$0.00	\$68.75
	06/01/2022	\$43.83	\$8.60	\$17.32	\$0.00	\$69.75
	12/01/2022	\$44.83	\$8.60	\$17.32	\$0.00	\$70.75
	06/01/2023	\$45.83	\$8.60	\$17.32	\$0.00	\$71.75
	12/01/2023	\$47.08	\$8.60	\$17.32	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.05	\$8.60	\$17.32	\$0.00	\$65.97
	06/01/2021	\$41.07	\$8.60	\$17.32	\$0.00	\$66.99
	12/01/2021	\$42.08	\$8.60	\$17.32	\$0.00	\$68.00
	06/01/2022	\$43.08	\$8.60	\$17.32	\$0.00	\$69.00
	12/01/2022	\$44.08	\$8.60	\$17.32	\$0.00	\$70.00
	06/01/2023	\$45.08	\$8.60	\$17.32	\$0.00	\$71.00
	12/01/2023	\$46.33	\$8.60	\$17.32	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.45	\$13.50	\$15.70	\$0.00	\$78.65
	06/01/2021	\$50.54	\$13.50	\$15.70	\$0.00	\$79.74
	12/01/2021	\$51.68	\$13.50	\$15.70	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2021	\$55.41	\$13.00	\$20.01	\$0.00	\$88.42
	09/01/2021	\$56.84	\$13.00	\$20.06	\$0.00	\$89.90
	03/01/2022	\$58.04	\$13.00	\$20.09	\$0.00	\$91.13
	09/01/2022	\$59.48	\$13.00	\$20.13	\$0.00	\$92.61
	03/01/2023	\$60.67	\$13.00	\$20.17	\$0.00	\$93.84

Issue Date: 04/06/2021

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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.74	\$15.88	\$0.00	\$0.00	\$47.62
2	55	\$34.91	\$15.88	\$19.31	\$0.00	\$70.10
3	65	\$41.26	\$15.88	\$19.31	\$0.00	\$76.45
4	70	\$44.43	\$15.88	\$19.31	\$0.00	\$79.62
5	80	\$50.78	\$15.88	\$19.31	\$0.00	\$85.97

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74

Notes:
Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2021	\$44.43	\$15.88	\$19.31	\$0.00	\$79.62
	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR LABORERS - ZONE 1	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	12/01/2023	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) LABORERS - ZONE 1 (HEAVY & HIGHWAY)	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG. INST. PERSON-BLDG, SITE, HVY/HWY OPERATING ENGINEERS LOCAL 4	11/01/2020	\$45.23	\$13.00	\$15.70	\$0.00	\$73.93
	05/01/2021	\$45.88	\$13.50	\$15.70	\$0.00	\$75.08
	11/01/2021	\$46.88	\$13.50	\$15.70	\$0.00	\$76.08
	05/01/2022	\$48.03	\$13.50	\$15.70	\$0.00	\$77.23
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG. PARTY CHIEF-BLDG, SITE, HVY/HWY OPERATING ENGINEERS LOCAL 4	11/01/2020	\$46.74	\$13.00	\$15.70	\$0.00	\$75.44
	05/01/2021	\$47.40	\$13.50	\$15.70	\$0.00	\$76.60
	11/01/2021	\$48.41	\$13.50	\$15.70	\$0.00	\$77.61
	05/01/2022	\$49.57	\$13.50	\$15.70	\$0.00	\$78.77
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIELD ENG. ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2020	\$22.73	\$13.00	\$15.70	\$0.00	\$51.43
	05/01/2021	\$22.91	\$13.50	\$15.70	\$0.00	\$52.11
	11/01/2021	\$23.51	\$13.50	\$15.70	\$0.00	\$52.71
	05/01/2022	\$24.18	\$13.50	\$15.70	\$0.00	\$53.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2021	\$55.41	\$13.00	\$20.01	\$0.00	\$88.42
	09/01/2021	\$56.84	\$13.00	\$20.06	\$0.00	\$89.90
	03/01/2022	\$58.04	\$13.00	\$20.09	\$0.00	\$91.13
	09/01/2022	\$59.48	\$13.00	\$20.13	\$0.00	\$92.61
	03/01/2023	\$60.67	\$13.00	\$20.17	\$0.00	\$93.84
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS</i> <i>LOCAL 103</i>	03/01/2021	\$42.11	\$13.00	\$17.88	\$0.00	\$72.99
	09/01/2021	\$43.77	\$13.00	\$18.00	\$0.00	\$74.77
	03/01/2022	\$45.27	\$13.00	\$18.12	\$0.00	\$76.39
	09/01/2022	\$46.99	\$13.00	\$18.24	\$0.00	\$78.23
	03/01/2023	\$48.54	\$13.00	\$18.37	\$0.00	\$79.91
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$40.75	\$13.50	\$15.70	\$0.00	\$69.95
	06/01/2021	\$41.66	\$13.50	\$15.70	\$0.00	\$70.86
	12/01/2021	\$42.61	\$13.50	\$15.70	\$0.00	\$71.81
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2020	\$24.50	\$8.60	\$17.32	\$0.00	\$50.42
	06/01/2021	\$24.50	\$8.60	\$17.32	\$0.00	\$50.42
	12/01/2021	\$24.50	\$8.60	\$17.32	\$0.00	\$50.42
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2021	\$48.59	\$9.40	\$19.25	\$0.00	\$77.24
	09/01/2021	\$49.39	\$9.40	\$19.25	\$0.00	\$78.04
	03/01/2022	\$50.19	\$9.40	\$19.25	\$0.00	\$78.84

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - FLOORCOVERER - Local 2168 Zone 1

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.30	\$9.40	\$1.79	\$0.00	\$35.49
2	55	\$26.72	\$9.40	\$1.79	\$0.00	\$37.91
3	60	\$29.15	\$9.40	\$13.88	\$0.00	\$52.43
4	65	\$31.58	\$9.40	\$13.88	\$0.00	\$54.86
5	70	\$34.01	\$9.40	\$15.67	\$0.00	\$59.08
6	75	\$36.44	\$9.40	\$15.67	\$0.00	\$61.51
7	80	\$38.87	\$9.40	\$17.46	\$0.00	\$65.73
8	85	\$41.30	\$9.40	\$17.46	\$0.00	\$68.16

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.70	\$9.40	\$1.79	\$0.00	\$35.89
2	55	\$27.16	\$9.40	\$1.79	\$0.00	\$38.35
3	60	\$29.63	\$9.40	\$13.88	\$0.00	\$52.91
4	65	\$32.10	\$9.40	\$13.88	\$0.00	\$55.38
5	70	\$34.57	\$9.40	\$15.67	\$0.00	\$59.64
6	75	\$37.04	\$9.40	\$15.67	\$0.00	\$62.11
7	80	\$39.51	\$9.40	\$17.46	\$0.00	\$66.37
8	85	\$41.98	\$9.40	\$17.46	\$0.00	\$68.84

Notes: Steps are 750 hrs.
 % After 09/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
 Step 1&2 \$33.03/ 3&4 \$39.64/ 5&6 \$59.08/ 7&8 \$65.73

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER: OPERATING ENGINEERS LOCAL 4	12/01/2020	\$49.98	\$13.50	\$15.70	\$0.00	\$79.18
	06/01/2021	\$51.08	\$13.50	\$15.70	\$0.00	\$80.28
	12/01/2021	\$52.23	\$13.50	\$15.70	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS OPERATING ENGINEERS LOCAL 4	12/01/2020	\$33.00	\$13.50	\$15.70	\$0.00	\$62.20
	06/01/2021	\$33.75	\$13.50	\$15.70	\$0.00	\$62.95
	12/01/2021	\$34.54	\$13.50	\$15.70	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) GLAZIERS LOCAL 35 (ZONE 2)	01/01/2021	\$41.56	\$8.25	\$22.75	\$0.00	\$72.56

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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 12/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$27.49	\$13.50	\$0.00	\$0.00	\$40.99
2	60	\$29.99	\$13.50	\$15.70	\$0.00	\$59.19
3	65	\$32.49	\$13.50	\$15.70	\$0.00	\$61.69
4	70	\$34.99	\$13.50	\$15.70	\$0.00	\$64.19
5	75	\$37.49	\$13.50	\$15.70	\$0.00	\$66.69
6	80	\$39.98	\$13.50	\$15.70	\$0.00	\$69.18
7	85	\$42.48	\$13.50	\$15.70	\$0.00	\$71.68
8	90	\$44.98	\$13.50	\$15.70	\$0.00	\$74.18

Effective Date - 06/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$28.09	\$13.50	\$0.00	\$0.00	\$41.59
2	60	\$30.65	\$13.50	\$15.70	\$0.00	\$59.85
3	65	\$33.20	\$13.50	\$15.70	\$0.00	\$62.40
4	70	\$35.76	\$13.50	\$15.70	\$0.00	\$64.96
5	75	\$38.31	\$13.50	\$15.70	\$0.00	\$67.51
6	80	\$40.86	\$13.50	\$15.70	\$0.00	\$70.06
7	85	\$43.42	\$13.50	\$15.70	\$0.00	\$72.62
8	90	\$45.97	\$13.50	\$15.70	\$0.00	\$75.17

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2021	\$51.67	\$13.65	\$24.57	\$2.70	\$92.59
	08/01/2021	\$53.42	\$13.65	\$24.57	\$2.75	\$94.39
	02/01/2022	\$55.17	\$13.65	\$24.57	\$2.80	\$96.19
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2021	\$55.41	\$13.00	\$20.01	\$0.00	\$88.42
	09/01/2021	\$56.84	\$13.00	\$20.06	\$0.00	\$89.90
	03/01/2022	\$58.04	\$13.00	\$20.09	\$0.00	\$91.13
	09/01/2022	\$59.48	\$13.00	\$20.13	\$0.00	\$92.61
	03/01/2023	\$60.67	\$13.00	\$20.17	\$0.00	\$93.84
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2021	\$51.67	\$13.65	\$24.57	\$2.70	\$92.59
	08/01/2021	\$53.42	\$13.65	\$24.57	\$2.75	\$94.39
	02/01/2022	\$55.17	\$13.65	\$24.57	\$2.80	\$96.19
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) PIPEFITTERS LOCAL 537	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC PIPEFITTERS LOCAL 537	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS LABORERS - ZONE 1	12/01/2020	\$40.65	\$8.60	\$17.32	\$0.00	\$66.57
	06/01/2021	\$41.67	\$8.60	\$17.32	\$0.00	\$67.59
	12/01/2021	\$42.68	\$8.60	\$17.32	\$0.00	\$68.60
	06/01/2022	\$43.68	\$8.60	\$17.32	\$0.00	\$69.60
	12/01/2022	\$44.68	\$8.60	\$17.32	\$0.00	\$70.60
	06/01/2023	\$45.68	\$8.60	\$17.32	\$0.00	\$71.60
	12/01/2023	\$46.93	\$8.60	\$17.32	\$0.00	\$72.85
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS - ZONE 1 (HEAVY & HIGHWAY)	12/01/2020	\$40.65	\$8.60	\$17.32	\$0.00	\$66.57
	06/01/2021	\$41.67	\$8.60	\$17.32	\$0.00	\$67.59
	12/01/2021	\$42.68	\$8.60	\$17.32	\$0.00	\$68.60
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	09/01/2020	\$49.00	\$13.80	\$17.14	\$0.00	\$79.94
	09/01/2021	\$51.40	\$13.80	\$17.14	\$0.00	\$82.34
	09/01/2022	\$53.85	\$13.80	\$17.14	\$0.00	\$84.79

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston

Effective Date - 09/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.50	\$13.80	\$12.42	\$0.00	\$50.72
2	60	\$29.40	\$13.80	\$13.36	\$0.00	\$56.56
3	70	\$34.30	\$13.80	\$14.31	\$0.00	\$62.41
4	80	\$39.20	\$13.80	\$15.25	\$0.00	\$68.25

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.70	\$13.80	\$12.42	\$0.00	\$51.92
2	60	\$30.84	\$13.80	\$13.36	\$0.00	\$58.00
3	70	\$35.98	\$13.80	\$14.31	\$0.00	\$64.09
4	80	\$41.12	\$13.80	\$15.25	\$0.00	\$70.17

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 7 (BOSTON AREA)	09/16/2020	\$48.66	\$8.10	\$25.10	\$0.00	\$81.86
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 7 Boston

Effective Date - 09/16/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$29.20	\$8.10	\$25.10	\$0.00	\$62.40
2	70	\$34.06	\$8.10	\$25.10	\$0.00	\$67.26
3	75	\$36.50	\$8.10	\$25.10	\$0.00	\$69.70
4	80	\$38.93	\$8.10	\$25.10	\$0.00	\$72.13
5	85	\$41.36	\$8.10	\$25.10	\$0.00	\$74.56
6	90	\$43.79	\$8.10	\$25.10	\$0.00	\$76.99

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 1	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	12/01/2023	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER LABORERS - ZONE 1	12/01/2020	\$39.90	\$8.60	\$17.32	\$0.00	\$65.82
	06/01/2021	\$40.92	\$8.60	\$17.32	\$0.00	\$66.84
	12/01/2021	\$41.93	\$8.60	\$17.32	\$0.00	\$67.85
	06/01/2022	\$42.93	\$8.60	\$17.32	\$0.00	\$68.85
	12/01/2022	\$43.93	\$8.60	\$17.32	\$0.00	\$69.85
	06/01/2023	\$44.93	\$8.60	\$17.32	\$0.00	\$70.85
	12/01/2023	\$46.18	\$8.60	\$17.32	\$0.00	\$72.10

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 1</i>	12/01/2020	\$39.90	\$8.60	\$17.32	\$0.00	\$65.82
	06/01/2021	\$40.92	\$8.60	\$17.32	\$0.00	\$66.84
	12/01/2021	\$41.93	\$8.60	\$17.32	\$0.00	\$67.85
	06/01/2022	\$42.93	\$8.60	\$17.32	\$0.00	\$68.85
	12/01/2022	\$43.93	\$8.60	\$17.32	\$0.00	\$69.85
	06/01/2023	\$44.93	\$8.60	\$17.32	\$0.00	\$70.85
	12/01/2023	\$46.18	\$8.60	\$17.32	\$0.00	\$72.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 1</i>	12/01/2020	\$39.90	\$8.60	\$17.32	\$0.00	\$65.82
	06/01/2021	\$40.92	\$8.60	\$17.32	\$0.00	\$66.84
	12/01/2021	\$41.93	\$8.60	\$17.32	\$0.00	\$67.85
	06/01/2022	\$42.93	\$8.60	\$17.32	\$0.00	\$68.85
	12/01/2022	\$43.93	\$8.60	\$17.32	\$0.00	\$69.85
	06/01/2023	\$44.93	\$8.60	\$17.32	\$0.00	\$70.85
	12/01/2023	\$46.18	\$8.60	\$17.32	\$0.00	\$72.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.05	\$8.60	\$17.32	\$0.00	\$65.97
	06/01/2021	\$41.07	\$8.60	\$17.32	\$0.00	\$66.99
	12/01/2021	\$42.08	\$8.60	\$17.32	\$0.00	\$68.00
	06/01/2022	\$43.08	\$8.60	\$17.32	\$0.00	\$69.00
	12/01/2022	\$44.08	\$8.60	\$17.32	\$0.00	\$70.00
	06/01/2023	\$45.08	\$8.60	\$17.32	\$0.00	\$71.00
	12/01/2023	\$46.33	\$8.60	\$17.32	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	06/01/2024	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	12/01/2020	\$39.90	\$8.60	\$17.32	\$0.00	\$65.82
	06/01/2021	\$40.92	\$8.60	\$17.32	\$0.00	\$66.84
	12/01/2021	\$41.93	\$8.60	\$17.32	\$0.00	\$67.85
	06/01/2022	\$42.93	\$8.60	\$17.32	\$0.00	\$68.85
	12/01/2022	\$43.93	\$8.60	\$17.32	\$0.00	\$69.85
	06/01/2023	\$44.93	\$8.60	\$17.32	\$0.00	\$70.85
	12/01/2023	\$46.18	\$8.60	\$17.32	\$0.00	\$72.10
For apprentice rates see "Apprentice- LABORER"						

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	12/01/2020	\$39.90	\$8.60	\$17.32	\$0.00	\$65.82
	06/01/2021	\$40.92	\$8.60	\$17.32	\$0.00	\$66.84
	12/01/2021	\$41.93	\$8.60	\$17.32	\$0.00	\$67.85
	06/01/2022	\$42.93	\$8.60	\$17.32	\$0.00	\$68.85
	12/01/2022	\$43.93	\$8.60	\$17.32	\$0.00	\$69.85
	06/01/2023	\$44.93	\$8.60	\$17.32	\$0.00	\$70.85
	12/01/2023	\$46.18	\$8.60	\$17.32	\$0.00	\$72.10
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	12/01/2023	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2021	\$42.57	\$11.39	\$20.14	\$0.00	\$74.10
	08/01/2021	\$43.69	\$11.39	\$20.30	\$0.00	\$75.38
	02/01/2022	\$44.16	\$11.39	\$20.30	\$0.00	\$75.85

Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.29	\$11.39	\$20.14	\$0.00	\$52.82
2	60	\$25.54	\$11.39	\$20.14	\$0.00	\$57.07
3	70	\$29.80	\$11.39	\$20.14	\$0.00	\$61.33
4	80	\$34.06	\$11.39	\$20.14	\$0.00	\$65.59
5	90	\$38.31	\$11.39	\$20.14	\$0.00	\$69.84

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.85	\$11.39	\$20.30	\$0.00	\$53.54
2	60	\$26.21	\$11.39	\$20.30	\$0.00	\$57.90
3	70	\$30.58	\$11.39	\$20.30	\$0.00	\$62.27
4	80	\$34.95	\$11.39	\$20.30	\$0.00	\$66.64
5	90	\$39.32	\$11.39	\$20.30	\$0.00	\$71.01

Notes:

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2021	\$55.77	\$11.39	\$22.08	\$0.00	\$89.24
	08/01/2021	\$57.17	\$11.39	\$22.24	\$0.00	\$90.80
	02/01/2022	\$57.74	\$11.39	\$22.24	\$0.00	\$91.37

Apprentice - *MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile*

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.89	\$11.39	\$22.08	\$0.00	\$61.36
2	60	\$33.46	\$11.39	\$22.08	\$0.00	\$66.93
3	70	\$39.04	\$11.39	\$22.08	\$0.00	\$72.51
4	80	\$44.62	\$11.39	\$22.08	\$0.00	\$78.09
5	90	\$50.19	\$11.39	\$22.08	\$0.00	\$83.66

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.59	\$11.39	\$22.24	\$0.00	\$62.22
2	60	\$34.30	\$11.39	\$22.24	\$0.00	\$67.93
3	70	\$40.02	\$11.39	\$22.24	\$0.00	\$73.65
4	80	\$45.74	\$11.39	\$22.24	\$0.00	\$79.37
5	90	\$51.45	\$11.39	\$22.24	\$0.00	\$85.08

Notes:

Apprentice to Journeyworker Ratio: 1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.45	\$13.50	\$15.70	\$0.00	\$78.65
	06/01/2021	\$50.54	\$13.50	\$15.70	\$0.00	\$79.74
	12/01/2021	\$51.68	\$13.50	\$15.70	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.45	\$13.50	\$15.70	\$0.00	\$78.65
	06/01/2021	\$50.54	\$13.50	\$15.70	\$0.00	\$79.74
	12/01/2021	\$51.68	\$13.50	\$15.70	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 1) <i>MILLWRIGHTS LOCAL 1121 - Zone 1</i>	01/04/2021	\$44.07	\$9.40	\$20.45	\$0.00	\$73.92
	01/03/2022	\$45.82	\$9.40	\$20.45	\$0.00	\$75.67
	01/02/2023	\$47.57	\$9.40	\$20.45	\$0.00	\$77.42

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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$8.25	\$0.00	\$0.00	\$34.28
2	55	\$28.63	\$8.25	\$6.16	\$0.00	\$43.04
3	60	\$31.24	\$8.25	\$6.72	\$0.00	\$46.21
4	65	\$33.84	\$8.25	\$7.28	\$0.00	\$49.37
5	70	\$36.44	\$8.25	\$19.39	\$0.00	\$64.08
6	75	\$39.05	\$8.25	\$19.95	\$0.00	\$67.25
7	80	\$41.65	\$8.25	\$20.51	\$0.00	\$70.41
8	90	\$46.85	\$8.25	\$21.63	\$0.00	\$76.73

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2021	\$42.96	\$8.25	\$22.75	\$0.00	\$73.96
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* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.48	\$8.25	\$0.00	\$0.00	\$29.73
2	55	\$23.63	\$8.25	\$6.16	\$0.00	\$38.04
3	60	\$25.78	\$8.25	\$6.72	\$0.00	\$40.75
4	65	\$27.92	\$8.25	\$7.28	\$0.00	\$43.45
5	70	\$30.07	\$8.25	\$19.39	\$0.00	\$57.71
6	75	\$32.22	\$8.25	\$19.95	\$0.00	\$60.42
7	80	\$34.37	\$8.25	\$20.51	\$0.00	\$63.13
8	90	\$38.66	\$8.25	\$21.63	\$0.00	\$68.54

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) PAINTERS LOCAL 35 - ZONE 2	01/01/2021	\$41.02	\$8.25	\$22.75	\$0.00	\$72.02
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Issue Date: 04/06/2021

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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.81	\$8.25	\$0.00	\$0.00	\$28.06
2	55	\$21.79	\$8.25	\$6.16	\$0.00	\$36.20
3	60	\$23.77	\$8.25	\$6.72	\$0.00	\$38.74
4	65	\$25.75	\$8.25	\$7.28	\$0.00	\$41.28
5	70	\$27.73	\$8.25	\$19.39	\$0.00	\$55.37
6	75	\$29.72	\$8.25	\$19.95	\$0.00	\$57.92
7	80	\$31.70	\$8.25	\$20.51	\$0.00	\$60.46
8	90	\$35.66	\$8.25	\$21.63	\$0.00	\$65.54

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	12/01/2020	\$39.90	\$8.60	\$17.32	\$0.00	\$65.82
LABORERS - ZONE 1 (HEAVY & HIGHWAY)	06/01/2021	\$40.92	\$8.60	\$17.32	\$0.00	\$66.84
	12/01/2021	\$41.93	\$8.60	\$17.32	\$0.00	\$67.85
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PANEL & PICKUP TRUCKS DRIVER	12/01/2020	\$36.08	\$12.91	\$14.82	\$0.00	\$63.81
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	06/01/2021	\$36.88	\$12.91	\$14.82	\$0.00	\$64.61
	08/01/2021	\$36.88	\$13.41	\$14.82	\$0.00	\$65.11
	12/01/2021	\$36.88	\$13.41	\$16.01	\$0.00	\$66.30
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER LOCAL 56 (ZONE 1)						
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER LOCAL 56 (ZONE 1)						

Issue Date: 04/06/2021

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Classification Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$9.40	\$23.12	\$0.00	\$57.06
2	60	\$29.44	\$9.40	\$23.12	\$0.00	\$61.96
3	70	\$34.35	\$9.40	\$23.12	\$0.00	\$66.87
4	75	\$36.80	\$9.40	\$23.12	\$0.00	\$69.32
5	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
6	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
7	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68
8	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68

Notes:
 % Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$34.01/ 3&4 \$41.46/ 5&6 \$62.80/ 7&8 \$69.25

Apprentice to Journeyworker Ratio:1:5

PIPEFITTER & STEAMFITTER PIPEFITTERS LOCAL 537	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
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Apprentice - PIPEFITTER - Local 537

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$23.18	\$11.70	\$8.25	\$0.00	\$43.13
2	45	\$26.07	\$11.70	\$20.24	\$0.00	\$58.01
3	60	\$34.76	\$11.70	\$20.24	\$0.00	\$66.70
4	70	\$40.56	\$11.70	\$20.24	\$0.00	\$72.50
5	80	\$46.35	\$11.70	\$20.24	\$0.00	\$78.29

Notes:
 ** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.
 Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

PIPELAYER LABORERS - ZONE 1	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	12/01/2023	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY) LABORERS - ZONE 1 (HEAVY & HIGHWAY)	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PLUMBERS & GASFITTERS PLUMBERS & GASFITTERS LOCAL 12	03/01/2021	\$60.19	\$13.57	\$17.26	\$0.00	\$91.02

Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$21.07	\$13.57	\$6.24	\$0.00	\$40.88
2	40	\$24.08	\$13.57	\$7.08	\$0.00	\$44.73
3	55	\$33.10	\$13.57	\$9.63	\$0.00	\$56.30
4	65	\$39.12	\$13.57	\$11.33	\$0.00	\$64.02
5	75	\$45.14	\$13.57	\$13.03	\$0.00	\$71.74

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic\$67.89, Step5 with lic\$75.59

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) PIPEFITTERS LOCAL 537	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR LABORERS - ZONE 1	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	12/01/2023	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) LABORERS - ZONE 1 (HEAVY & HIGHWAY)	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWDERMAN & BLASTER LABORERS - ZONE 1	12/01/2020	\$40.90	\$8.60	\$17.32	\$0.00	\$66.82
	06/01/2021	\$41.92	\$8.60	\$17.32	\$0.00	\$67.84
	12/01/2021	\$42.93	\$8.60	\$17.32	\$0.00	\$68.85
	06/01/2022	\$43.93	\$8.60	\$17.32	\$0.00	\$69.85
	12/01/2022	\$44.93	\$8.60	\$17.32	\$0.00	\$70.85
	06/01/2023	\$45.93	\$8.60	\$17.32	\$0.00	\$71.85
	12/01/2023	\$47.18	\$8.60	\$17.32	\$0.00	\$73.10
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) LABORERS - ZONE 1 (HEAVY & HIGHWAY)	12/01/2020	\$40.90	\$8.60	\$17.32	\$0.00	\$66.82
	06/01/2021	\$41.92	\$8.60	\$17.32	\$0.00	\$67.84
	12/01/2021	\$42.93	\$8.60	\$17.32	\$0.00	\$68.85
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE OPERATING ENGINEERS LOCAL 4	12/01/2020	\$49.98	\$13.50	\$15.70	\$0.00	\$79.18
	06/01/2021	\$51.08	\$13.50	\$15.70	\$0.00	\$80.28
	12/01/2021	\$52.23	\$13.50	\$15.70	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.98	\$13.50	\$15.70	\$0.00	\$79.18
	06/01/2021	\$51.08	\$13.50	\$15.70	\$0.00	\$80.28
	12/01/2021	\$52.23	\$13.50	\$15.70	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$33.00	\$13.50	\$15.70	\$0.00	\$62.20
	06/01/2021	\$33.75	\$13.50	\$15.70	\$0.00	\$62.95
	12/01/2021	\$34.54	\$13.50	\$15.70	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 170 - Rosenfeld (Walpole)</i>	01/01/2021	\$23.50	\$11.51	\$8.00	\$0.00	\$43.01
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.45	\$13.50	\$15.70	\$0.00	\$78.65
	06/01/2021	\$50.54	\$13.50	\$15.70	\$0.00	\$79.74
	12/01/2021	\$51.68	\$13.50	\$15.70	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	12/01/2023	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.45	\$13.50	\$15.70	\$0.00	\$78.65
	06/01/2021	\$50.54	\$13.50	\$15.70	\$0.00	\$79.74
	12/01/2021	\$51.68	\$13.50	\$15.70	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc. Roofer Waterproofing & Roofer Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2021	\$46.60	\$12.28	\$17.15	\$0.00	\$76.03
	08/01/2021	\$48.03	\$12.28	\$17.15	\$0.00	\$77.46
	02/01/2022	\$49.46	\$12.28	\$17.15	\$0.00	\$78.89

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.30	\$12.28	\$4.31	\$0.00	\$39.89
2	60	\$27.96	\$12.28	\$17.15	\$0.00	\$57.39
3	65	\$30.29	\$12.28	\$17.15	\$0.00	\$59.72
4	75	\$34.95	\$12.28	\$17.15	\$0.00	\$64.38
5	85	\$39.61	\$12.28	\$17.15	\$0.00	\$69.04

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.02	\$12.28	\$4.31	\$0.00	\$40.61
2	60	\$28.82	\$12.28	\$17.15	\$0.00	\$58.25
3	65	\$31.22	\$12.28	\$17.15	\$0.00	\$60.65
4	75	\$36.02	\$12.28	\$17.15	\$0.00	\$65.45
5	85	\$40.83	\$12.28	\$17.15	\$0.00	\$70.26

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
 Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
 (Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)
 Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	02/01/2021	\$46.85	\$12.28	\$17.15	\$0.00	\$76.28
	08/01/2021	\$48.28	\$12.28	\$17.15	\$0.00	\$77.71
	02/01/2022	\$49.71	\$12.28	\$17.15	\$0.00	\$79.14
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	02/01/2021	\$51.67	\$13.65	\$24.57	\$2.70	\$92.59
	08/01/2021	\$53.42	\$13.65	\$24.57	\$2.75	\$94.39
	02/01/2022	\$55.17	\$13.65	\$24.57	\$2.80	\$96.19

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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$21.70	\$13.65	\$5.89	\$0.00	\$41.24
2	42	\$21.70	\$13.65	\$5.89	\$0.00	\$41.24
3	47	\$24.28	\$13.65	\$11.13	\$1.48	\$50.54
4	47	\$24.28	\$13.65	\$11.13	\$1.48	\$50.54
5	52	\$26.87	\$13.65	\$12.08	\$1.58	\$54.18
6	52	\$26.87	\$13.65	\$12.33	\$1.59	\$54.44
7	60	\$31.00	\$13.65	\$13.70	\$1.76	\$60.11
8	65	\$33.59	\$13.65	\$14.65	\$1.88	\$63.77
9	75	\$38.75	\$13.65	\$16.56	\$2.08	\$71.04
10	85	\$43.92	\$13.65	\$17.96	\$2.28	\$77.81

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$22.44	\$13.65	\$5.89	\$0.00	\$41.98
2	42	\$22.44	\$13.65	\$5.89	\$0.00	\$41.98
3	47	\$25.11	\$13.65	\$11.13	\$1.48	\$51.37
4	47	\$25.11	\$13.65	\$11.13	\$1.48	\$51.37
5	52	\$27.78	\$13.65	\$12.08	\$1.58	\$55.09
6	52	\$27.78	\$13.65	\$12.33	\$1.59	\$55.35
7	60	\$32.05	\$13.65	\$13.70	\$1.76	\$61.16
8	65	\$34.72	\$13.65	\$14.65	\$1.88	\$64.90
9	75	\$40.07	\$13.65	\$16.56	\$2.08	\$72.36
10	85	\$45.41	\$13.65	\$17.96	\$2.28	\$79.30

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/01/2020	\$36.54	\$12.91	\$14.82	\$0.00	\$64.27
	06/01/2021	\$37.34	\$12.91	\$14.82	\$0.00	\$65.07
	08/01/2021	\$37.34	\$13.41	\$14.82	\$0.00	\$65.57
	12/01/2021	\$37.34	\$13.41	\$16.01	\$0.00	\$66.76
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/01/2020	\$36.83	\$12.91	\$14.82	\$0.00	\$64.56
	06/01/2021	\$37.63	\$12.91	\$14.82	\$0.00	\$65.36
	08/01/2021	\$37.63	\$13.41	\$14.82	\$0.00	\$65.86
	12/01/2021	\$37.63	\$13.41	\$16.01	\$0.00	\$67.05
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1	03/01/2021	\$62.45	\$10.00	\$21.25	\$0.00	\$93.70

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$21.86	\$10.00	\$11.99	\$0.00	\$43.85
2	40	\$24.98	\$10.00	\$12.70	\$0.00	\$47.68
3	45	\$28.10	\$10.00	\$13.41	\$0.00	\$51.51
4	50	\$31.23	\$10.00	\$14.13	\$0.00	\$55.36
5	55	\$34.35	\$10.00	\$14.84	\$0.00	\$59.19
6	60	\$37.47	\$10.00	\$15.55	\$0.00	\$63.02
7	65	\$40.59	\$10.00	\$16.26	\$0.00	\$66.85
8	70	\$43.72	\$10.00	\$16.98	\$0.00	\$70.70
9	75	\$46.84	\$10.00	\$17.69	\$0.00	\$74.53
10	80	\$49.96	\$10.00	\$18.40	\$0.00	\$78.36

Notes: Apprentice entered prior 9/30/10:
 40/45/50/55/60/65/70/75/80/85
 Steps are 850 hours
 Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR OPERATING ENGINEERS LOCAL 4	12/01/2020	\$49.45	\$13.50	\$15.70	\$0.00	\$78.65
	06/01/2021	\$50.54	\$13.50	\$15.70	\$0.00	\$79.74
	12/01/2021	\$51.68	\$13.50	\$15.70	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN OPERATING ENGINEERS LOCAL 4	12/01/2020	\$49.45	\$13.50	\$15.70	\$0.00	\$78.65
	06/01/2021	\$50.54	\$13.50	\$15.70	\$0.00	\$79.74
	12/01/2021	\$51.68	\$13.50	\$15.70	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN ELECTRICIANS LOCAL 103	03/01/2021	\$42.11	\$13.00	\$17.88	\$0.00	\$72.99
	09/01/2021	\$43.77	\$13.00	\$18.00	\$0.00	\$74.77
	03/01/2022	\$45.27	\$13.00	\$18.12	\$0.00	\$76.39
	09/01/2022	\$46.99	\$13.00	\$18.24	\$0.00	\$78.23
	03/01/2023	\$48.54	\$13.00	\$18.37	\$0.00	\$79.91

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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.35	\$11.39	\$22.09	\$0.00	\$60.83
2	60	\$32.81	\$11.39	\$22.09	\$0.00	\$66.29
3	70	\$38.28	\$11.39	\$22.09	\$0.00	\$71.76
4	80	\$43.75	\$11.39	\$22.09	\$0.00	\$77.23
5	90	\$49.22	\$11.39	\$22.09	\$0.00	\$82.70

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.05	\$11.39	\$22.25	\$0.00	\$61.69
2	60	\$33.65	\$11.39	\$22.25	\$0.00	\$67.29
3	70	\$39.26	\$11.39	\$22.25	\$0.00	\$72.90
4	80	\$44.87	\$11.39	\$22.25	\$0.00	\$78.51
5	90	\$50.48	\$11.39	\$22.25	\$0.00	\$84.12

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2020	\$41.30	\$8.60	\$17.47	\$0.00	\$67.37
	06/01/2021	\$42.32	\$8.60	\$17.47	\$0.00	\$68.39
	12/01/2021	\$43.33	\$8.60	\$17.47	\$0.00	\$69.40
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2020	\$40.02	\$8.60	\$17.47	\$0.00	\$66.09
	06/01/2021	\$41.04	\$8.60	\$17.47	\$0.00	\$67.11
	12/01/2021	\$42.05	\$8.60	\$17.47	\$0.00	\$68.12
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2020	\$39.90	\$8.60	\$17.47	\$0.00	\$65.97
	06/01/2021	\$40.92	\$8.60	\$17.47	\$0.00	\$66.99
	12/01/2021	\$41.93	\$8.60	\$17.47	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.45	\$13.50	\$15.70	\$0.00	\$78.65
	06/01/2021	\$50.54	\$13.50	\$15.70	\$0.00	\$79.74
	12/01/2021	\$51.68	\$13.50	\$15.70	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2020	\$37.12	\$12.91	\$14.82	\$0.00	\$64.85
	06/01/2021	\$37.92	\$12.91	\$14.82	\$0.00	\$65.65
	08/01/2021	\$37.92	\$13.41	\$14.82	\$0.00	\$66.15
	12/01/2021	\$37.92	\$13.41	\$16.01	\$0.00	\$67.34
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2020	\$52.13	\$8.60	\$17.92	\$0.00	\$78.65
	06/01/2021	\$53.15	\$8.60	\$17.92	\$0.00	\$79.67
	12/01/2021	\$54.16	\$8.60	\$17.92	\$0.00	\$80.68
For apprentice rates see "Apprentice- LABORER"						

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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2020	\$54.13	\$8.60	\$17.92	\$0.00	\$80.65
	06/01/2021	\$55.15	\$8.60	\$17.92	\$0.00	\$81.67
	12/01/2021	\$56.16	\$8.60	\$17.92	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2020	\$44.20	\$8.60	\$17.92	\$0.00	\$70.72
	06/01/2021	\$45.22	\$8.60	\$17.92	\$0.00	\$71.74
	12/01/2021	\$46.23	\$8.60	\$17.92	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2020	\$46.20	\$8.60	\$17.92	\$0.00	\$72.72
	06/01/2021	\$47.22	\$8.60	\$17.92	\$0.00	\$73.74
	12/01/2021	\$48.23	\$8.60	\$17.92	\$0.00	\$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2020	\$36.54	\$12.91	\$14.82	\$0.00	\$64.27
	06/01/2021	\$37.34	\$12.91	\$14.82	\$0.00	\$65.07
	08/01/2021	\$37.34	\$13.41	\$14.82	\$0.00	\$65.57
	12/01/2021	\$37.34	\$13.41	\$16.01	\$0.00	\$66.76
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
	06/01/2022	\$43.18	\$8.60	\$17.32	\$0.00	\$69.10
	12/01/2022	\$44.18	\$8.60	\$17.32	\$0.00	\$70.10
	06/01/2023	\$45.18	\$8.60	\$17.32	\$0.00	\$71.10
	12/01/2023	\$46.43	\$8.60	\$17.32	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2020	\$40.15	\$8.60	\$17.32	\$0.00	\$66.07
	06/01/2021	\$41.17	\$8.60	\$17.32	\$0.00	\$67.09
	12/01/2021	\$42.18	\$8.60	\$17.32	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2020	\$49.98	\$13.50	\$15.70	\$0.00	\$79.18
	06/01/2021	\$51.08	\$13.50	\$15.70	\$0.00	\$80.28
	12/01/2021	\$52.23	\$13.50	\$15.70	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	03/01/2021	\$60.19	\$13.57	\$17.26	\$0.00	\$91.02
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)

Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

** Multiple ratios are listed in the comment field.

*** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.

**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

Issue Date: 04/06/2021

Wage Request Number: 20210406-012

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Massachusetts Prevailing Wage Law M.G.L. ch. 149, §§ 26 – 27

NOTICE TO AWARDING AUTHORITIES

- The enclosed wage schedule applies only to the specific project listed at the top and will be updated for any public construction project lasting longer than one (1) year.
- You should request an updated wage schedule from the Division of Occupational Safety if you have not opened bids or selected a contractor within 90 days of the date of issuance of the enclosed wage schedule.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project for which it has been issued.
- Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project.

NOTICE TO CONTRACTORS

- The enclosed wage schedule, and any updated schedule, must be posted in a conspicuous place at the work site during the life of the project.
- The wages listed on the enclosed wage schedule must be paid to employees on public works projects regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- The enclosed wage schedule applies to all phases of the project including the final clean-up. Contractors whose only role is to perform final clean-up must pay their employees according to this wage schedule.
- All apprentices must be registered with the Massachusetts Division of Apprentice Training in order to be paid at the reduced apprentice rates. If a worker is not registered with the Division of Apprentice Training, they must be paid the “total rate” listed on the wage schedule regardless of experience or skill level. For further information, please call (617) 727-3486 or write to the Division of Apprentice Training, 399 Washington Street, 4th Floor, Boston, MA 02108

**WEEKLY PAYROLL RECORDS REPORT
& STATEMENT OF COMPLIANCE**

In accordance with Massachusetts General Law c149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form has been printed on the reverse of this page and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

In addition, every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority. This is required to be done on a weekly basis. Once collected, the awarding authority is also required to preserve those records for three years.

In addition, each such contractor, subcontractor or public body shall furnish to the Department of Labor & Workforce Development/Division of Occupational Safety within fifteen days after completion of its portion of the work a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

_____, 2021

I, _____,
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by
_____ on the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

DIVISION OF OCCUPATIONAL SAFETY, 399 WASHINGTON STREET, 5TH FL., BOSTON, MA. 02108

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SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work under this contract generally consists of the construction of approximately 215 linear feet of 6-inch diameter, 190 linear feet of 8-inch diameter, and 420 linear feet of 12-inch diameter ductile iron water main and associated valves, fittings, hydrants, water services, and temporary by-pass piping. The work also includes the cleaning and lining of approximately 2,550 linear feet of 12-inch diameter water main and associated valves, fittings, hydrants, water services, and temporary by-pass piping. The work under this contract is located on Chestnut Street in Newton, Massachusetts.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01013

FACILITY INTERFERENCE WITH PROPOSED WORK

PART 1 GENERAL

1.01 LOCATION OF UNDERGROUND FACILITIES

- A. Facilities and other underground locations shown on the Drawings are from the best sources available to the Owner at the time of this Contract preparation and are furnished only for information and convenience of the Contractor and are not guaranteed.
1. It is agreed and understood that the Owner does not warrant or guarantee that the subsurface locations of existing pipes, structures or other underground phenomena actually encountered during construction shall be the same as those shown on the Drawings.
 2. It is further agreed and understood that the Contractor shall not use or be entitled to use any of the information made available to him on the plans or obtained in any examination made by him as a basis of any claim or demand against the Owner or the Engineer, because of any variance between the information made available and the subsurface locations of natural phenomena, existing pipes or other structures as actually encountered during the construction work, except as may otherwise be provided for this Section.
 3. In general, main line facilities only are shown and not individual connections from main line to buildings.
 4. The presence of a structure along a proposed pipeline generally indicates that there will be a corresponding connection to it from whatever main line facilities are in the street.
 5. The Contractor shall take all necessary steps, including field inspections and consultations with the Utility Owner and Property Owners, to insure that the most up to date information and accurate information available is used to mark the field location of the facilities, including service connections, prior to construction.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.03 PIPE LOCATIONS

- A. Pipe lines and structures installed under this Contract will be located substantially as indicated on the Drawings. The Engineer reserves the right to make such modifications in location and grade as may be found desirable to avoid interference with existing structures and/or facilities or to avoid unsatisfactory locations, all as he may see fit as in the best interests of the Owner.

1.04 PROTECTION OF UNDERGROUND FACILITIES AND DAMAGES THERETO

- A. The Contractor shall notify "Dig Safe" of his operations at least 72 hours prior to construction on any portion of the project.
1. The Contractor shall notify all utility companies of his operations sufficiently in advance of construction and take all measures necessary to avoid damage or undue interruption to the utilities' normal services.
 2. Utility poles shall be braced by the Contractor as directed by the utilities' owner and all costs shall be included in the contract unit prices.
 3. No additional compensation shall be allowed because of damage to facilities due to test pit excavation.

1.05 CONDITION OF EXISTING FACILITIES

- A. In general, poor physical condition of existing facilities shall not be an acceptable basis for claiming additional compensation.
1. Further, protection or repair of existing facilities outside of the Trench Width, W, shall not be considered as a valid basis for additional compensation.
 2. The Contractor shall take all prudent steps to make himself aware of the physical condition of the existing facilities expected to be encountered, and to adjust his operations accordingly.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION

3.01 INTERFERENCE AND RELOCATION OF FACILITIES

A. INTERFERENCE BY UTILITIES

1. Interference shall be considered to exist when the facility intrudes within the Trench Width, W, for various depths to invert, as tabulated on the Drawings.

3.02 INTERFERENCE COSTS AND CLAIMS

A. Claims for the costs of protecting, repairing, and/or replacing facilities which interfere will only be considered when the Engineer determines that:

1. The facility is not shown on the Drawings.
2. The facility is shown but the facility is found in a location substantially different from the location shown.
3. The Contractor has necessarily incurred additional cost because of the interference.
4. In general, claims will not be considered for cross trench service connections which are not shown on the Drawings or incorrectly shown.

B. It is routine and customary in work of this kind to encounter subsurface or other conditions which require changes in pipe line grade, alignment and/or relocation of facilities or other adjustments which may necessitate rescheduling of the Contractor's work.

1. The Contractor should allow contingency in his bid for schedule adjustments commonly encountered.
2. The Engineer shall in general not approve claims for delay because of changes in alignment or rescheduling of construction.

C. Where facilities are shown on the Drawings to interfere, the Contractor is required to maintain facilities in operation in their existing locations.

1. Such interferences and the protection and repair of such facilities shall not constitute the basis of an approvable claim.
2. The cost to maintain such facilities in operation in their existing location shall be included by the Contractor in his bid.

3.03 RELOCATION OF FACILITIES

A. Relocation of facilities is required:

1. Where indicated on the Drawings.
2. When a 3-inch or less vertical and horizontal separation cannot be achieved between the existing facility and the new pipe line.
3. To comply with minimum water/sewer separation.
4. To comply with minimum requirements of the utility owner.
5. Relocation may be avoided in certain cases by line and grade adjustments.

B. Existing facilities shall not be disturbed until the facility owner and the Engineer agree to the arrangements and the Engineer requests the relocation to proceed in writing.

1. If the owners of the facilities permit, and the Engineer so requests, the Contractor shall do the whole or any portion of the relocation work.
2. Relocation of facilities will generally be by new pipe and appurtenances, approved and furnished by the facility owner, except where it is feasible in the opinion of the Engineer and facility owner to utilize existing materials.
3. If so requested by the facility owner, the Engineer may direct the Contractor to furnish the material.
4. All removed materials remain the property of the facility owner.

3.04 RELOCATION COSTS AND CLAIMS

A. All costs of temporary relocations for the Contractor's convenience shall be borne by the Contractor.

B. Relocation costs for all facilities specified on the Drawings to be relocated shall be the responsibility of the Contractor and be included in the Contractor's bid prices, including those specifically for facility relocations, if such are included.

- C. Relocation costs for publicly owned facilities not specified on the Drawings to be relocated, but directed to be relocated by the Engineer in writing, shall be paid in accordance with General Conditions Par. 5.05.
- D. Relocation costs for privately owned utilities for which relocation is required by the work of this Contract, will not be approved by the Engineer for payment as Extra Work.
- E. Exceptions as determined by the Engineer shall be paid in accordance with General Conditions Par. 4.04, B.

3.05 PRIVATE FACILITY COMPANY CLAIM DISTINCTIONS

- A. Claims against the Owner by the Contractor for the cost of delays or damage repair sustained by the Contractor because of damage to or interferences between privately owned public facilities and the proposed work will not be considered valid for additional compensation.
 - 1. Claims involving privately owned facilities must be settled between the Contractor and the facility owner.
- B. The Owner reserves the right to exercise, or not to exercise, any rights he may have to require relocation of privately owned public facilities at the facility company's expense in case of interferences.
 - 1. If the Owner does not exercise such rights, no claims against the Owner for not exercising such rights shall be approved by the Engineer.

3.06 FACILITY SERVICE CONNECTIONS AND WORK

- A. The Contractor shall make all arrangements with the facility companies for temporary and permanent services and relocations required under this Contract, subject to the conditions described elsewhere in these Specifications.
 - 1. Facility companies in the area of work, and/or expected to provide service to the work, shall be arranged for and if required paid for at no additional expense to the Owner.

END OF SECTION

SECTION 01019

DRAWINGS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Bid Documents:
 - 1. Drawings must be obtained through the City of Newton Purchasing Department. The drawings can be obtained at the City's Website (www.newtonma.gov/gov/purchasing/current).
- B. The Contract Drawings may be modified by addenda and shall be issued for construction purposes.
 - 1. These Drawings may be supplemented or superseded by such additional general and detail drawings as may be necessary and desirable as the work progresses.
 - 2. The Drawings issued for construction at that time or after the signing of the Contract Documents shall become the Contract Drawings.
- C. Dimensions:
 - 1. Except where noted, the Drawings are made to scale, but all working dimensions shall be taken from the figured dimensions or by actual measurements at the work, and in no case by scaling the prints.
 - 2. The Contractor shall study and compare all Drawings and verify all figures before laying out or constructing the work and shall be responsible for any and all errors in the Contract work which might have been avoided thereby.
 - 3. The Contractor shall take all measurements of existing established conditions notwithstanding the figured dimensions on the Drawings.
 - 4. When figured dimensions are not in agreement with the Contractor's measurements, the Engineer shall be immediately notified and the Engineer will promptly adjust the same.
 - 5. Whether or not an error is believed to exist, deviations from the Drawings and the dimensions given thereon shall be made only after approval in writing is obtained from the Engineer.
- D. Diagrammatic Drawings:
 - 1. Plans or Drawings where the work is shown diagrammatically indicate approved working systems. Every piece of material, fittings, fixtures or small equipment is not shown, nor every difficulty or interference that may be encountered to carry out the true intent and purpose of the Contract Documents.
 - 2. All necessary parts to make complete, approved working systems or installation shall be included as if detailed on these Drawings.
 - 3. The location of pipe lines and appurtenances shown on the Drawings, unless exactly dimensioned, shall be considered as approximate only.
 - 4. The Contractor shall adjust the position of the pipe lines and appurtenances in accordance with good working practices to meet interferences, provide proper clearance and provide proper access space for operation and maintenance.
- E. Typical Details:
 - 1. Where shown on the Drawings, typical details shall apply to each and every item of the Contract work where such items are incorporated and the detail is applicable.
 - 2. Unless noted otherwise, such typical details shall be applicable in full.
- F. Copies of Drawings Furnished:
 - 1. The Engineer shall furnish the Contractor, without charge, up to six copies of the Drawings and Specifications for execution of the Contract work.
 - 2. Additional copies will be furnished at the Contractor's expense when requested, except that any copies of available plans and specifications returned from the bidders in good condition will be furnished to the Contractor without charge.
 - 3. All Drawings and Specifications are the property of the Owner.
 - 4. The Contractor shall return all copies if so requested.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 EXISTING AND ADJACENT CONDITIONS

- A. Wherever existing conditions or construction not required as part of the work of the Contract are shown, they are so shown as a source of information only. The Engineer, while believing such information is substantially correct, assumes no responsibility thereof.
- 1. Before starting any work that might be affected by such existing construction or conditions, the Contractor shall have made himself familiar with all conditions affecting the nature and manner of performing the work, and shall not be entitled to any extra compensation for any work or expense arising from or caused by his neglect to have verified all existing conditions and requirements.

3.02 DISCREPANCIES

- A. If the Contractor, during the progress of the work, discovers any discrepancies between the Drawings and the Specifications, any errors or omissions on the Drawings, or any discrepancies between the physical condition of the Work and the Drawings, then the Contractor shall immediately notify the Engineer, who will promptly adjust the same. Any work performed after such discovery without the approval of the Engineer, shall be at the risk and expense of the Contractor.

END OF SECTION

SECTION 01020

ALLOWANCES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Stated allowances for materials testing shall be as appears in SECTION 00300, Bid Form, Item No. 24: Materials Testing.

Stated allowances for materials testing shall be paid as specified in SECTION 01025, MEASUREMENT AND PAYMENT. The requirement for competitive bids is waived.

The dollar amount stated is only approximate. Whether the approved materials testing expenses are more or less, the Contractor shall be reimbursed by the Owner the actual approved costs as billed.

- B. Stated allowances for miscellaneous work shall be as appears in SECTION 00300, Bid Form, Item No. 25: Miscellaneous Work Allowance (Engineer's Discretionary Fund).

Stated allowances for miscellaneous work shall be paid as specified in SECTION 01025, MEASUREMENT AND PAYMENT. The requirement for competitive bids is waived.

The dollar amount stated is only approximate. Whether the approved miscellaneous work expenses are more or less, the Contractor shall be reimbursed by the Owner the actual approved costs.

- C. Stated allowances for uniformed police officers shall be as appears in SECTION 00300, Bid Form, Item No. 29: Allowance for Payment of Uniformed Police Officers.

Stated allowances for uniformed police officers shall be paid as specified in SECTION 01025, MEASUREMENT AND PAYMENT. The requirement for competitive bids is waived.

The dollar amount stated is only approximate.

- D. Stated allowances for water sampling (by laboratory personnel) shall be as appears in SECTION 00300, Bid Form, Item No. 75: Water Sampling (By Laboratory Personnel).

Stated allowances for sampling (by laboratory personnel) shall be paid as specified in SECTION 01025, MEASUREMENT AND PAYMENT. The requirement for competitive bids is waived.

The dollar amount stated is only approximate. Whether the approved water sampling (by laboratory personnel) expenses are more or less, the Contractor shall be reimbursed by the Owner the actual approved costs as billed.

- E. Stated allowances for hot mix asphalt mixtures and fuel shall be as appears in SECTION 00300, Bid Form, Item No. 84 and No. 85, respectively.

1.02 RELATED WORK SPECIFIED ELSEWHERE

SECTION 01025 - MEASUREMENT AND PAYMENT

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 DESCRIPTION

- A. The purpose of this Section is to define the method of measurement and payment for each of the unit prices or lump sums listed in the Bid Proposal. If no bid item appears in the Bid Proposal for any of the following described items, no work of that description is anticipated on the project.
1. The Contractor shall thoroughly review the work required for each payment item.
 2. The Contractor shall have included in his various bid items, an amount to cover costs for additional work which may be necessary, to construct the water mains in the close proximity of underground facilities, services, poles and other facilities which may exist.
 3. The discovery of an underground facility during the construction, not shown on the Contract Drawings shall not constitute automatic initiation of a change order. The additional work to cross or pass this underground facility must be substantial for consideration for additional payment.
 - a. The word “substantial” as used above shall mean that an additional amount of work is required, beyond the work that is normally required in the crossing or paralleling of an underground facility.
- B. There will be no separate payment for compliance with the Commonwealth of Massachusetts COVID-19 Guidelines and Procedures for All Construction Site and Workers at All Public Work document. The costs associated with compliance shall be included in the various unit price or lump sum bid prices in the contract.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include General Conditions, Supplementary Conditions, and all Divisions of these Specifications.

1.03 TRENCH PAYMENT LIMITS

- A. The measurements for trench payment limits shall be used for the volume of computing excavation below grade and trench related items.
1. Trench limits in earth and rock shall be measured within vertical lines. The measured lines shall not exceed a width equal to the outside pipe diameter, plus three (3) feet.
 2. Grade shall be measured vertically from the surface of the existing ground to a maximum point of six (6) inches below the bottom of the pipe, for trenches in earth.
 - a. In trenches where rock is encountered, grade shall be one (1) foot below the bottom of the pipe.
 3. In paved roadways the trench width at the roadway surface, to a depth of twelve (12) inches below the surface shall not exceed a width of six (6) feet.
 4. If the Owner orders additional width beyond the above-specified limits, or below grade excavation, the width or depth ordered will be considered for payment, as will the refill material.

1.04 TRENCH BRACING AND SUPPORT

- A. All costs for furnishing, installing and removing sheeting, bracing, or the use of a steel support box shall be included in the various pipe laying items. Sheeting specifically shown on the Contract Drawings shall be paid for under the unit bid item for Sheeting Left In Place.

1.05 PIPE BEDDING

- A. Measurement taken for Pipe Bedding shall be by the ton for reasonably dry material as delivered to the site and which is subsequently placed. The Contractor shall furnish the Engineer with receipts from the plant showing the weight of each load of reasonably dry sand material which is furnished and placed, however the Engineer reserves the right to adjust the payment in the event the volume of material is either not entirely used, and/or the material is excessively wet, and/or the shipment has arrived on the site as already partially used.

- 1.06 SURPLUS MATERIAL
- A. All costs for stockpiling, loading, hauling, and legal disposing of surplus material shall be included in the various pipe laying items.
- 1.07 DEWATERING
- A. All costs for furnishing, installing and operating a dewatering system shall be included in the various pipe laying items.
- 1.08 EXCESS EXCAVATED MATERIAL
- A. All costs for transporting, placing, and compacting excess material obtained within this Contract shall be included in Item No. 3 - General Excavation.
- 1.09 DENSE GRADED CRUSHED STONE, BANK-RUN SAND, AND GRAVEL
- A. Measurement taken for Dense Graded Crushed Stone shall be by the ton for reasonably dry material as delivered to the site and which is subsequently placed. The Contractor shall furnish the Engineer with receipts from the plant showing the weight of each load of reasonably dry dense graded material which is furnished and placed, however the Engineer reserves the right to adjust the payment in the event the volume of material is either not entirely used, and/or the material is excessively wet, and/or the shipment has arrived on the site as already partially used.
- 1.10 PRESSURE/LEAKAGE TESTING AND DISINFECTION
- A. Payment shall be made for labor, materials, tools, and equipment necessary for or incidental to the performance of the pressure/leakage tests and the disinfection of the water main and its appurtenances. The costs associated with pressure/leakage testing and disinfection shall be included in the unit price for pressure test, leakage test, and disinfection of water main(s) item.
- 1.11 REMOVING AND STACKING GATE VALVES
- A. No separate payment shall be made for labor, materials, tools, and equipment necessary for or incidental to the removal of and stacking of the gate valves and capping of existing mains, locations determined by the Owner. The cost for this item shall be included in the unit price for the various pipe-laying items.
- 1.12 CAPPING AND ABANDONMENT (IN-PLACE) OF OLD MAINS
- A. No separate payment shall be made for labor, materials, tools, and equipment necessary for or incidental to the capping of and abandonment (in-place) of the water mains and valves including closing valves, removing valve boxes and pavement replacement. The cost for this item shall be included in the unit price for the various pipe-laying items.
- 1.13 RESTORATION OF DAMAGED AREAS
- A. All costs for restoration of damaged areas, including but not necessarily limited, to existing curbs, shrubs, trees, stone walls, and lawns, shall be included in the unit price for the various pipe-laying items or designated items in the bid form.
- B. All public or private monuments, iron pipes or other types of property line and geodetic markers damaged or disturbed by operations under this Contract shall be reset by a licensed land surveyor - all at no additional cost to the Owner. All other work, under this Section, shall not be paid separately, but shall be considered incidental to the work and included in the unit price and lump sum items.
- 1.14 UNIFORMED POLICE OFFICERS
- A. Measurement and payment for traffic persons shall be at hourly rate for the Police Department of the Owner as billed directly to the Contractor. The allowance in the bid as stated in Section 01020, "Allowances," is approximate.

- B. The Police Department will bill the Contractor directly, and the Owner shall reimburse the Contractor under Bid Item No. 29 for Allowance for Payment of Uniformed Police Officers provided on the job site. The billing shall include a weekly statement outlining the days worked, hours worked, location of the work and rate for all officers providing service during that billing period. The Police Chief must sign all bills.
- C. Traffic persons ordered by the Contractor for his convenience or unforeseen problems which are not part of the original project, shall be paid at his own expense.
- D. The Contractor is responsible for contacting the Police Department in regards to scheduling requirements.
- E. Uniformed Police Officers required for purposes other than public safety and/or control of traffic shall not be eligible for reimbursement of payment. No payment will be made for overtime traffic persons unless emergency conditions exist. If the Contractor elects to work more than eight (8) hours in one day, or more than forty (40) hours in one week, he shall assume all such costs and will not be reimbursed under any bid item. However, if the Owner approves emergency overtime, the Owner shall pay the Police Department directly for services rendered.

1.15 TRAFFIC REGULATION

- A. Except for the payment of uniformed police officers as outlined in 1.14, there shall be no separate measurement or payment for the work performed under Section 01570 – Traffic Regulation. All costs for furnishing lighted barricades and traffic protection devices and for labor, equipment and services involved in the erecting, maintaining, moving, adjusting, relocating and storing of signs, flashers, lights, barricades, traffic cones, traffic delineators and other devices furnished by the Contractor, as well as the cost of all labor and equipment involved in the maintenance of traffic lanes and detours ordered or included in the approved scheme for maintenance of traffic shall be included in the unit price bid for Item No. 26 through Item No. 28 signboards, and traffic control devices.

1.16 MEASUREMENT OF QUANTITIES

- A. The quantities of the various items of work performed shall be determined, for purposes of progress and final payment, by the Contractor and reviewed by the Engineer.
- B. The method of measurements to be used in the determination of quantities of the work of this Contract shall be as specified in this Section.
 - 1. Area Measurements
 - a. Unless otherwise specified, measurement for area computations shall be made along the surface and taken to the nearest half (1/2) foot.
 - 2. Linear Measurements
 - a. All items such as pipe, service tubing, and curbing, etc., shall be made along the alignment of the item, at the surface, and taken to the nearest foot.
 - 3. Volume Measurements - In figuring volumes, the following shall apply:
 - a. Excavation Below Grade: Measurements shall be taken to the grade actually excavated as ordered, and within the trench payment limits specified in this Section.
 - b. Test Pits: Measurements shall be taken to the lines and grade actually excavated.
 - c. Rock and Boulder: Only boulders greater than one (1) cubic yard in volume and rock as defined in Section 02227, shall be measured for payment. Measurements shall be taken to the lines and grades as specified, in the trench payment limits in this Section.
 - 4. Weight Measurements: Measurement for fittings shall be measured for payment per each including accessories such as bolts, nuts, glands, and gaskets.
 - 5. Lump Sum: The term “lump sum” when used as a unit of payment, shall mean complete payment for the work described in the Contract Documents.
 - a. Measurement for temporary bypass piping shall be lump sum and shall include all piping and services along the water main route. Piping and services used to connect the temporary bypass pipe to existing hydrants, mains, or houses off side streets or beyond the limits shown on the drawings shall not be measured for payment.
 - 6. Per Each: The term “per each” when used as a unit of payment, shall mean complete payment for each unit furnished and installed, completed and accepted, as described in the Contract Documents.
 - 7. Ton: When used as a pavement payment item, shall be arrived at by the following method:
 - a. Payment shall be calculated by measurements of the surface area, within the payment limits, by square yards, times the depth of the pavement, times a factor of .056, for a conversion to ton basis.

- b. A five (5) percent service factor shall be allowed if a comparison between measurements and delivery slips indicate that additional material was placed. If a comparison between delivery slips and measurements indicate less material was placed, the slip quantity shall be used for payment. The Contractor shall submit to the Engineer, one (1) copy of the certified weight slips for all asphaltic concrete used in the Work.

1.17 BITUMINOUS (ASPHALTIC) CONCRETE PAVEMENT

A. MEASUREMENT

- 1. "Trench" Pavement shall be measured by the actual ton installed along the full length of the street for the standard trench width as identified in the specifications and on the Drawings.
 - a. Included in this item shall be the adjustment of all castings if required to finish grade within the trench area, and a binder course.
- 2. No separate measurement shall be made for cutting of existing pavement, cutting of edges, tack coating, backfilling, compaction, preparation of subgrade; furnishing and installing additional gravel base course; or disposal of materials.
- 3. No separate measurement shall be made for furnishing and installing reflectorized pavement markings and the removal and resetting of manhole frames, gate boxes, catch basins, and private utility castings.

1.18 DUST CONTROL

A. MEASUREMENT

- 1. All costs for furnishing, stockpiling, hauling, placing, and spread materials required for dust control (i.e. calcium chloride, water) shall be included in the various pipe-laying items.

1.19 PAYMENT

ITEM NO.	DESCRIPTION
1	Mobilization & Demobilization
2	Sawcut Bituminous Concrete Roadways
3	General Excavation
4	Test Pits
5	Excavation Below Grade
6	Rock Removal
7	Gravel Borrow
8	Dense Graded Crushed Stone
9	Sand for Water Service Pipe Bedding
10	¾" Fractured Crushed Stone
11	Control Density Fill
12	Class B Cement Concrete for Encasement
13	Dust Control (Chemical Treatment)
14	Reset Existing Curb
15	1.5" Trench Milling and Overlay
16	Seam and Crack Sealing (Applied After the Permanent Patch Operation)
17	2" Bituminous Concrete Walks & Driveways (Patching Private Property)
18	3" Bituminous Concrete Walks & Driveway Aprons (Patching Public Property)
19	4" Cement Concrete Walks with Lampblack
20	6" Cement Concrete Driveway Aprons with Lampblack
21	4" Temporary Trench Pavement
22	Cold Patch
23	Regrade, Loam, & Seed (Restore Loam Borders and/or Private Yards)
24	Materials Testing
25	Miscellaneous Work Allowance (Engineers Discretionary Fund)
26	Furnish & Mount Safety & Specialty Signboards (Less the Post System)
27	Furnish, Establish, & Re-Establish the Post System for Mounted Signboards
28	Safety Controls for Construction Operations (Primary Portable Traffic Control Devices)
29	Allowance for Payment of Uniformed Police Officers
30	Vehicle Loop Detector
31	Locate & Exercise Existing Water Main Gates to Determine Pre-Construction Serviceability
32	Locate & Exercise Existing Hydrants to Determine Pre-Construction Serviceability

- 33 Access Pit, Removal, & Disposal of Water Gates or Hydrants that Lie Beyond the Project Limit
- 34 Access Pit, Removal, & Disposal of Obstructions Discovered During the Cleaning and Lining Operation
- 35 6" D.I. Water Main
- 36 8" D.I. Water Main
- 37 12" D.I. Water Main
- 38 Clean and Line Existing 12" Pipe
- 39 6" Fire Service
- 40 6" Water Gate Valve with Sleeve, Box, and Cover
- 41 8" Water Gate Valve with Sleeve, Box, and Cover
- 42 12" Water Gate Valve with Sleeve, Box, and Cover
- 43 6" Insertion Valve with Sleeve, Box, and Cover
- 44 8" Insertion Valve with Sleeve, Box, and Cover
- 45 12" Insertion Valve with Sleeve, Box, and Cover
- 46 6" Hydrant
- 47 Remove and Dispose or Stockpile Hydrant
- 48 12" Bend
- 49 8" x 6" Reducer
- 50 12" x 12" Mechanical Joint Tee
- 51 12"x 8" Mechanical Joint Tee
- 52 12" x 6" Mechanical Joint Tee
- 53 6" Megalug
- 54 8" Megalug
- 55 12" Megalug
- 56 ¾" Diameter Threaded Steel Tie Rod Assembly (Complete in Place)
- 57 Class B Cement Concrete Anchorage and/or Thrust Block
- 58 6" Mechanical Joint Solid Sleeve or Coupling
- 59 8" Mechanical Joint Solid Sleeve or Coupling
- 60 12" Mechanical Joint Solid Sleeve or Coupling
- 61 6" Cap
- 62 2" Preformed Pipe Insulation with Plastic Jacketing
- 63 Test Pit to Determine Water Service Tubing Type
- 64 1" Copper Water Service Tubing
- 65 1" Corporation
- 66 1" Curb Stop & Box
- 67 Nominal 5/8" – 1" Water Service Coupling
- 68 1.5" Copper Water Service Tubing
- 69 1.5" Corporation
- 70 1.5" Curb Stop & Box
- 71 1.25" Water Service Pipe Fitting
- 72 1.5" Water Service Pipe Fitting
- 73 Temporary By-Pass Piping
- 74 Pressure Test, Leakage Test, & Disinfection of Water Mains
- 75 Water Sampling (by Laboratory Personnel)
- 76 Supply & Deliver Rust & Stain Remover as Required
- 77 Cleaning and Lining Pits
- 78 Additional Cleaning and Lining Pits Beyond the Scope of Work
- 79 Mismarked Mains (Cleaning and Lining Trenches Only)
- 80 Existing Drainage Repair (All Sizes)
- 81 Silt Sacks
- 82 Existing Sewer Service Repair (All Sizes)
- 83 Tree Protection
- 84 Price Adjustment: Hot Mix Asphalt Mixtures
- 85 Price Adjustment: Fuel

Item No. 1: Mobilization & Demobilization

Payment for mobilization and demobilization shall be at the lump sum price bid under Bid Item No. 1 in the Bid Form. The total price bid for mobilization and demobilization shall not exceed five (5) percent of the total amount of the remaining bid items. Payment shall be full compensation for bonds, insurance, transportation of equipment and materials to the construction site, obtaining of all permits including street opening and Jackie's Law permits, set up of storage yard, maintenance of same, telephone, electric, and the removal of equipment and

materials upon completion of the Work. The Engineer shall make percentage payments as he deems appropriate during the course of the Work.

Item No. 2: Sawcut Bituminous Concrete Roadways

Payment shall be made at the unit price bid per linear foot under Bid Item No. 2 in the Bid Item Sheets. Payment shall be full compensation for each linear foot of trench sawcut that has been pre-approved by the Engineer, which shall include the price for all labor, equipment and materials which will be required to complete these tasks throughout the entire term of the project, inclusive of the supplying of water, which unit price shall include full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under this item, as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 3: General Excavation

Important Informational Note: This is a Non-Pay Item

The contractor must incorporate the cost for all general excavation, and the cost of disposal of all associated undesirable materials, no matter what their nature may be, into the contract. No separate pay item shall exist for General Excavation but the cost of this work shall be factored by the Contractor into the bid prices of the various pay items of this contract.

General excavation shall consist of the work required for the excavation and disposal thereof for all operations over the entire limits of the project areas including, but not limited to, pipes, sidewalks, slopes, trenches (excluding rock/ledge removal), apertures, etc., and shall further include, in addition to the removal and disposal of all excess and/or unsuitable materials, the removal and disposal of brush, trees under six (6) inches in diameter, boulders less than one (1) cubic yard in volume, existing pavements (whatever their nature may be), peat, mud and anything else that must be removed and disposed of all as required by the Contract Documents.

Item No. 4: Test Pits

Payment shall be made at the unit price bid per cubic yard under Bid Item No. 4 in the Bid Form. Payment shall be full compensation for pavement cutting and removal, excavation, sheeting, shoring, dewatering, backfill material, backfilling and compaction of the backfill, and restoration of the surface including temporary and permanent pavement, all as required by the Contract Documents. No payment will be made under this item unless the Owner orders the test pit or required in the contract drawings.

Item No. 5: Excavation Below Grade

Under Bid Item No. 5 the Contractor will be paid the contract unit price per cubic yard of excavation below grade and the disposal of all undesirable material(s), which unit price shall include full compensation for all labor, materials, tools, equipment and all incidental work necessary to complete the work under this item, as shown on the plans or Construction Details, as directed by the Engineer and as specified herein. No payment will be made under this item unless the excavation below grade is ordered by the Owner.

Any off-site material needed to refill the trench, as pre-approved by the Engineer, and as specified herein, shall be paid under Bid Item No. 7 through Bid Item No. 11, whichever is applicable.

Item No. 6: Rock Removal

Under Bid Item No. 6 the Contractor will be paid the contract unit price per cubic yard for rock excavation and/or for rock removed greater than one (1) cubic yard in volume from the trench(es) and subsequently disposed of at an off-site location, which unit price shall be full compensation for all labor, tools, equipment and all incidental work necessary to complete the work under these items as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 7: Gravel Borrow

Payment shall be made at the unit price per ton under Bid Item No. 7 in the Bid Form. Payment shall be full compensation for furnishing, placing, compacting, labor, materials, tools and equipment, and all incidentals necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 8: Dense Graded Crushed Stone

Payment shall be made at the unit price bid per ton under Bid Item No. 8 in the Bid Form for furnishing and placing dense graded crushed stone, which unit price shall include full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 9: Sand for Water Service Pipe Bedding

Payment shall be made at the unit price bid per ton under Bid Item No. 9 in the Bid Form for furnishing and placing sand, which the unit price shall include full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 10: ¾" Fractured Crushed Stone

Payment shall be made at the unit price bid per ton under Bid Item No. 10 in the Bid Form. The unit price shall include full compensation for all labor, tools, equipment, and all incidental work necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 11: Controlled Density Fill

Payment shall be made at the unit price per cubic yard under Bid Item No. 11 in the Bid Form, measured as the actual quantity furnished and placed within the trench limits where requested by the Owner or required on the Drawings. The unit price bid shall be full compensation for furnishing, placing, grading and compacting within the trench payment limits, furnish, install, and remove plates all as required by the Contract Documents.

Item No. 12: Class B Cement Concrete for Encasement

Payment shall be made at the unit price bid per cubic yard under Bid Item No. 12 in the Bid Form for Class B cement concrete, complete in place, which unit price shall include full compensation for all labor, materials, tools, equipment and all incidentals necessary to complete the work as shown on the plans, as directed by the Engineer, and as specified herein.

Item No. 13: Dust Control (Chemical Treatment)

Payment shall be made at the unit price bid per pound under Bid Item No. 13 in the Bid Form. Payment shall be full compensation for Calcium Chloride dust control, complete in place, and shall include all labor, materials, tools, equipment, and all incidental work necessary to complete the work under this item as shown on the plans, as directed by the Engineer, and as specified herein. Water application, and daily brooming operations, for the purpose of controlling dust, will be paid under Bid Item No. 35 through Bid Item No. 38.

Item No. 14: Reset Existing Curb

Payment shall be made at the unit price bid per linear foot under Bid Item No. 14 of reset existing granite curb, complete in place, which unit price shall include full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under this item, as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 15: 1.5" Trench Milling and Overlay

Payment shall be made at the unit price bid per ton under Bid Item No. 15 in the Bid Form for 1.5-inch trench milling and overlay. Payment shall be full compensation for all project limits. Payment shall include, but not be limited to 1.5" milling for final top course paving of the water main trench and 6 inches on either side of the outer edges water main trench, furnishing and placing 1.5 inches of bituminous concrete top course, cut back, keying, temporary plates, restoration of private and public properties, infra-red sealing, pavement markings, all as required by the Contract Documents.

Item No. 16: Seam and Crack Sealing (Applied After the Permanent Patch Operation)

Payment shall be made at the unit price bid under Bid Item No. 16 in the Bid Form per gallon of sealant for cleaning and sealing of seams and/or cracks in bituminous concrete pavement, complete in place, which unit

price shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under this item as directed by the Engineer and as specified herein.

Item No. 17: 2" Bituminous Concrete Walks & Driveways (Patching Private Property)

Payment shall be made at the unit price bid under Bid Item No. 17 in the Bid Form per square yard for constructing bituminous concrete walks and/or driveways, complete in place, including excavation, disposal of excess material(s), and for the gravel and dense graded crushed stone base. The unit price shall include full compensation for all labor, materials, tools, and equipment and all incidental work necessary to complete the work under this item in accordance with the plans, as directed by the Engineer and as specified herein.

Item No. 18: 3" Bituminous Concrete Walks & Driveway Aprons (Patching Public Property)

Payment shall be made at the unit price bid under Bid Item No. 18 in the Bid Form per square yard for constructing bituminous concrete walks and/or driveway aprons, complete in place, including excavation, disposal of excess material(s), and for the gravel and dense graded crushed stone base. The unit price shall include full compensation for all labor, materials, tools, and equipment and all incidental work necessary to complete the work under this item in accordance with the plans, as directed by the Engineer and as specified herein.

Item No. 19: 4" Cement Concrete Walks with Lampblack

Payment shall be made at the unit price bid under Bid Item No. 19 in the Bid Form per square yard for the cement concrete walks, complete in place, including the gravel and dense graded crushed stone base and pre-molded asphalt expansion joints, and for the excavation and the disposal of all undesirable material(s). The unit price shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein, inclusive of the raising of all service boxes to finished grade.

Item No. 20: 6" Cement Concrete Driveway Aprons with Lampblack

Payment shall be made at the unit price bid under Bid Item No. 20 in the Bid Form per square yard for the cement concrete driveway aprons, complete in place, including the gravel and dense graded crushed stone base and pre-molded asphalt expansion joints, and for the excavation and the disposal of all undesirable material(s). The unit price shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein, inclusive of the raising of all service boxes to finished grade.

Item No. 21: 4" Temporary Trench Pavement

Payment shall be made at the unit price per ton noted under Bid Item No. 21 in the Bid Form.

Payment shall be full compensation for all preparatory work and furnishing, placing and compacting of the temporary asphaltic concrete pavement as required by the Contract Documents. The price shall include the cost of the bituminous material, placement, and maintenance throughout construction including additional materials and labor required due to settlement of low areas, leveling course, tack coat, additional gravel base course, process gravel, cutting or keying of the pavement, sand sealing, removal and resetting all manhole frames, sweeping, gate boxes, catch basins, casting adjustments, etc.; the reflective pavement markings, and all other materials, tools, equipment, labor and work necessary for or incidental to the completion and maintenance of the temporary trench pavement, all as required by the Contract Documents.

Item No. 22: Cold Patch

Payment shall be made at the price bid per ton under Bid Item No. 22 in the Bid Form. Payment shall be full compensation for all preparatory work and furnishing, placing and compacting of cold patch pavement as required by the Contract Documents. The price shall include the cost of the bituminous material placement and maintenance of the construction to include additional materials and labor required due to settlement. Payment for furnishing, installing and compacting the processed gravel sub-base for roadway shall be made under the applicable unit price bid per ton, as required by the Contract Documents.

Item No. 23: Regrade, Loam, & Seed (Restore Loam Borders and/or Private Yards)

Payment shall be made at the unit price bid under Bid Item No. 23 in the Bid Form per square yard for all loam areas, complete in place, which unit price shall include full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under this item in accordance with the plans, as directed by the Engineer, and as specified herein.

Item No. 24: Materials Testing

Payment shall be made from the stated allowance noted under Bid Item No. 24 in the Bid Form for approved and/or authorized material testing services conducted by an independent and qualified laboratory. Under no circumstances will the City of Newton pay for any testing procedures, which excessively exceed the accepted industry standards.

Item No. 25: Miscellaneous Work Allowance (Engineers Discretionary Fund)

Payment shall be made for work completed under Bid Item No. 25, in full or in part, as pre-approved by the Engineer.

Item No. 26: Furnish, Mount Safety & Specialty Signboards (Less the Post System)

Payment shall be made at the unit price bid per square foot under Bid Item No. 26 in the Bid Form for each new professionally made safety and specialty signboard authorized by the Engineer. The express intent, under this item is to re-use the signboards whenever safety issues are not compromised, mobilizing, and moving the signboards from project zone to project zone as the construction operation progresses, without any further additional compensation being made under this item. Under this item signboards are to be furnished, complete in place, which unit price shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under this item, as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 27: Furnish, Establish, & Re-Establish the Post System for Mounted Signboards

Under Bid Item No. 27, the Contractor will be paid the contract unit price for each signboard post system furnished, complete in place, which unit price shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under this item, as shown on the plans, as directed by the Engineer and as specified herein. No additional payment will be made for signpost systems, which are damaged and replaced.

Item No. 28: Safety Controls for Construction Operations (Primary Portable Traffic Control Devices)

Payment shall be made at the unit price bid per lump sum under Bid Item No. 28 in the Bid Form and shall constitute full payment for all materials, labor and equipment required or incidental to the work described above and/or as shown on the plans. Any devices which are lost, stolen, destroyed, or deemed unacceptable while their use is required on the project shall be replaced without additional compensation. This item shall also include the cost to furnish and install two variable message boards at locations of the Owner's choice for the duration of Construction. The Engineer shall make percentage payments as he deems appropriate during the course of these operations.

Item No. 29: Allowance for Payment of Uniformed Police Officers

Payment shall be made from the stated allowance noted under Bid Item No. 29 in the Bid Form.

The Police Department will bill the Contractor directly, and the Owner shall reimburse the Contractor under Bid Item No. 29 for uniformed police officer provided on the job site. The billing shall include a weekly statement outlining the days worked, hours worked, location of the work and rate for all officers providing service during that billing period. All bills must be signed by the Police Chief. Uniformed Police Officers required for purposes other than public safety and/or control of traffic shall not be allowed.

Subject to the conditions set forth in Section 01572, under Bid Item No. 29 in the Bid Form the invoiced amounts(s) shall be paid directly to the City of Newton Police Department and/or to the Massachusetts State Police for services rendered by Police officers. These payments shall be made through a direct inter-

departmental billing and payment program administered by the Engineer; therefore, a capital outlay by the contractor will not be required.

Item No. 30: Vehicle Loop Detector

Payment shall be made at the unit price bid per linear foot under Bid Item No. 30 in the Bid Form of Vehicle Loop Detector, complete in place, which unit price shall include full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under this item in accordance with the plans, as directed by the Engineer, and as specified herein. Permanent trench resurfacing shall be paid for under Item 15.

Item No. 31: Locate & Exercise Existing Water Main Gates to Determine Pre-Construction Serviceability

Payment shall be made at the unit price bid per each under Bid Item No. 31 in the Bid Form. Payment shall be full compensation for locating, accessing, and exercising gate valves and valve boxes as required by the Contract Documents. Additional work involved in coordinating these activities involves supplying and posting notices as required, subsequent backfilling of any aperture, and immediate disposal of all generated debris. The price shall include the above activities as well as time, labor, materials, tools, equipment, and all incidentals necessary to complete the work under this item as show on the plans, as directed by the Engineer and as specified herein.

Water main and water main appurtenances (i.e. gates, boxes, sleeves, pipe, couplings, hydrants, bends, clamps, tie-rods, and safety flanges) that are ordered by the Engineer to correct any pre-existing deficiency, and/or used to restore the main in order to render it fully operational prior to the commencement of the installation of the bypass system and/or the pipe replacement activities, shall be paid for under other applicable items of this contract.

Item No. 32: Locate and Exercise Existing Hydrants to Determine Pre-Construction Serviceability

Payment shall be made at the unit price bid per each under Bid Item No. 32 in the Bid Form. Payment shall be full compensation for locating, accessing and exercising hydrants, inclusive of the work involved in coordinating these activities, for supplying and posting notices as required, and for subsequently backfilling any associated aperture and/or for the immediate restoration of eroded loam borders, and for the immediate disposal of all generated debris. The price shall include the above activities as well as time, labor, materials, tools and equipment and all incidentals necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein.

Water main and water main appurtenances (i.e. gates, boxes, sleeves, pipe, couplings, hydrants, bends, clamps, tie-rods, and safety flanges) that are ordered by the Engineer to correct any pre-existing deficiency, and/or used to restore the main in order to render it fully operational prior to the commencement of the installation of the bypass system and/or the pipe replacement activities, shall be paid for under other applicable items of this contract.

Item No. 33: Access Pit, Removal, & Disposal of Water Gates or Hydrants that Lie Beyond the Project Limit

Under Bid Item No. 33, the Contractor will be paid the contract unit price for each ‘stand alone’ isolated access pit made *prior to* the commencement of the bypass installation activities, where such pits are made specifically for the purpose of fully exposing an existing water main gate, a hydrant, a hydrant connection and/or any other water main appurtenance (exclusive of any minor work involving only boxes and sleeves) and for the subsequent removal of the deficient appurtenance(s), and such work shall include dewatering, protecting, safeguarding, barricading, shoring, decking and subsequently backfilling the aperture, as well as for the off-site disposal of all undesirable material(s), which unit price shall also include full compensation for all time, labor tools, and equipment, as well as for incidentals necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein.

Water main appurtenances (i.e. gates, sleeves, pipe, couplings, hydrants, bends, clamps, tie-rods, and safety flanges) used to restore the main shall be paid for under the separate applicable items of this contract. Hydrants which are removed under Bid Item No. 33 *and are subsequently delivered and stockpiled* at a City of Newton DPW yard shall be paid for under Bid Item No. 47. All other hydrants shall be disposed of under Bid Item No. 33 and at no cost to the City. Cement concrete, if required, shall be paid for under Bid Item No. 12, Gravel ordered by the Engineer shall be paid for under Bid Item No. 7. Surface patch shall be paid under Bid Item No. 15 and Bid Item No. 17 through Bid Item No. 22, whichever is applicable. The excavation and backfilling

operations required to straighten and/or replace only the gate boxes, either in whole or in part, shall be paid for under Bid Item No. 33.

Item No. 34: Access Pit, Removal, & Disposal of Obstructions Discovered During the Cleaning & Lining Operation

Under Bid Item No. 34, the Contractor will be paid the contract unit price for each 'stand alone' isolated access pit that is made to fully expose an existing water main obstruction that is discovered only during the initial cabling of the cleaning and lining operations, and such work shall additionally include the removal and disposal of the obstruction(s) and for dewatering, protecting, safeguarding, barricading, shoring, decking and subsequently backfilling the aperture, as well as for the off-site disposal of all undesirable material(s), which unit price shall also include full compensation for all time, labor, tools and equipment, and all incidentals necessary to complete the work under this item as shown on the plans, as directed by the Engineer, and as specified herein.

Water main appurtenances (i.e. gates, sleeves, pipe, couplings, hydrants, bends, clamps, tie-rods, and safety flanges) used to restore the main shall be paid for under the separate applicable items of this contract. Hydrants which are removed under Bid Item No. 33 and are subsequently delivered and stockpiled at a City of Newton DPW yard shall be paid for under Bid Item No. 47. All other hydrants shall be disposed of under Bid Item No. 33 and at no cost to the City. Cement concrete, if required, shall be paid for under Bid Item No. 12, Gravel ordered by the Engineer shall be paid for under Bid Item No. 7. Surface patch shall be paid under Bid Item No. 15 and Bid Item No. 17 through Bid Item No. 22, whichever is applicable. The excavation and backfilling operations required to straighten and/or replace only the gate boxes, either in whole or in part, shall be paid for under Bid Item No. 34.

Item No. 35 thru Item No. 37: 6", 8", and 12" Ductile Iron Water Main (Class 52 Cement Lined & Dispose of Existing Pipe(s))

Under Bid Item No. 35 through Bid Item No. 37 the Contractor will be paid the contract unit price per linear foot for furnishing, trenching and laying six (6) inch, eight (8) inch, and twelve (12) inch cement lined Class 52 ductile iron water main respectively, and for any special fittings and/or any other component, element and/or operation not otherwise listed on the Item Sheets of this contract, complete in place, which unit price shall include full compensation for all labor, notifications, providing as-built diagrams and ties, excavation, shoring, dewatering, disposal of all unclassified or undesirable material(s) including the removal and disposal of all existing water mains and water main appurtenances and removal and disposal of abandoned gate valve boxes, as well as for all backfilling operations, materials, tools and equipment, and all incidental work, inclusive of daily dust control by the method of brooming and/or water application, and for all other incidentals that are necessary to complete the work under this item as shown on the plans, and as specified herein.

Item No. 38: Clean and Line Existing 12" Pipe

Under Bid Item No. 38, the Contractor will be paid the contract unit price per linear foot for the cleaning and cement lining of existing twelve (12) inch inside diameter water mains, which unit price shall include full compensation for all labor, materials, for providing and distributing informational notifications, as well as for paint, layout, the determination of existing water gates/valves serviceability, providing as-built ties, and for all tools, equipment, saw cutting of pavements if not otherwise provided for under separate items, excavation, the disposal of all unclassified and/or undesirable material, shoring, backfill and backfilling, flushing, disinfection, TV inspection and all incidentals, inclusive of daily dust control by the method of brooming and/or water application, necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein.

Temporary water service bypass system(s) and service pipe(s) will be paid under Bid Item No. 73. Tees, valves, bends, restraints, couplings, hydrants, and/or pipes which are removed with the pre-approval of the Engineer and/or as shown on the plans, and are subsequently replaced with new and permanent ductile iron installations, shall be paid under separate applicable items of this contract. Thrust blocks, crushed stone, permanent bituminous patch, cement concrete panel repair, and regrading of loam, shall be paid under the applicable items of this contract when such items are listed on the Item Sheets of this contract, otherwise the Contractor is to factor the cost of this work into his bid price under Bid Item No. 38.

Item No. 39: 6" Fire Service

Important Informational Note: This is a Non-Pay Item

The contractor must incorporate the cost for all fire service replacements, and the cost of disposal of all associated undesirable materials, no matter what their nature may be, into the applicable bid items. No separate pay item shall exist for the replacement of fire services but the cost of this work shall be factored into the bid prices of the various pay items of this contract by the Contractor.

Fire service replacement shall consist of the work required to furnish, excavate and install each six (6) inch ductile iron pipe fire service, six (6) inch gate valve, and any special fittings and/or any other component, element and/or operation, complete in place, which unit prices shall include full compensation for all labor, notifications, providing as-built diagrams and ties, excavation, disposal of all unclassified or undesirable material(s) including the removal and disposal of all existing fire services and appurtenances, as well as for all backfilling operations, materials, tools and equipment, and all incidental work, that are necessary to complete the work under this item as shown on the plans, and as specified herein. Each 6-Inch Fire Service shall include the furnishing and installation of a six-inch (6") open right water gate, complete with sleeves, extensions, and covers.

Item No. 40 thru Item No. 42: 6", 8", and 12" Water Gate Valves with Sleeve, Box, & Cover

Under Bid Item No. 40 through Bid Item No. 42, the Contractor will be paid the contract unit price for furnishing and installing each (6) inch, eight (8) inch, and twelve (12) inch open clockwise (right) water gate, respectively, complete with sleeves, extensions, and covers, which unit price shall include full compensation for all labor, excavation, the disposal of all unclassified and/or undesirable materials, all plating, shoring and backfilling operations, the materials, tools and equipment necessary to perform this work, and all incidentals necessary to complete the work under these items as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 43 thru Item No. 45: 6", 8", and 12" Water Insertion Valves with Sleeve, Box, & Cover

Under Bid Item No. 43 through Bid Item No. 45, the Contractor will be paid the contract unit price for furnishing and installing each six (6) inch, eight (8) inch, and twelve (12) inch open clockwise (right) insertion valves, respectively, complete with sleeves, extensions, and covers, which unit price shall include full compensation for all labor, excavation, setting the valve, tapping the line, placing the valve box, the disposal of all unclassified and/or undesirable materials, all plating, shoring, dewatering, bedding, and backfilling operations, testing, the materials, tools and equipment necessary to perform this work, and all incidentals necessary to complete the work under these items as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 46: 6" Hydrant

Under Bid Item No. 46, the Contractor will be paid the contract unit price for each new hydrant furnished and installed, which unit price shall include full compensation for all labor, materials, hydrant extensions, tools and equipment and all incidentals necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein, inclusive of excavation, dewatering, the disposal of all undesirable material, and the subsequent backfilling of the aperture. In those cases where a new hydrant is replacing an existing hydrant, then the Contractor will be paid for the removal of the existing hydrant under Bid Item No. 47.

All earth excavation and the disposal of all unclassified and/or undesirable material(s) shall be included and paid under this item. Class B cement for thrust blocks will be paid for under Bid Item No. 57. The 6" gate valve with sleeve and cover and the length of pipe, will be paid for under the respective Bid Item Nos. 40 and 35, respectively.

Crushed stone, reset curb, reconstruction of bituminous berm, sidewalks, driveway aprons, loam borders, and roadway pavement shall be paid under standard applicable items only when such items have been made part of this contract otherwise the Contractor is to furnish and install these materials as part of this item.

Item No. 47: Remove and Dispose or Stockpile Hydrant

Payment shall be made at the unit price bid under Bid Item No. 47 in the Bid Form per each existing hydrant removed, and either disposed of at the Contractors expense or otherwise cleaned and subsequently neatly stockpiled at a location designated by the Engineer, which unit price shall include full compensation for all labor,

tools and equipment, and all incidentals necessary to complete the work under this item, as shown on the plans, and as directed by the Engineer.

All earth excavation and the disposal of all unclassified and/or undesirable material(s) shall be included and paid under this item.

Crushed stone, reset curb, reconstruction of bituminous berm, sidewalks, driveway aprons, loam borders, and roadway pavement shall be paid under standard applicable items only when such items have been made part of this contract otherwise the Contractor is to furnish and install these materials as part of this item.

Item No. 48: 12" Bends

Under Bid Item No. 48, the Contractor will be paid the contract unit price for each 12" bend, furnished, installed, and complete in place. Payment shall be full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under these items, in accordance with the plans, as directed by the Engineer and as specified herein.

Item No. 49: 8" x 6" Reducers

Payment shall be made at the unit price bid under Bid Item No. 49 in the Bid Form per each, 8" x 6" reducer, furnished, installed, and completed in place. Payment shall be full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under these items, in accordance with the plans, as directed by the Engineer and as specified herein.

Item No. 50 thru Item No. 52: 12" x 12", 12" x 8", and 12" x 6" Mechanical Joint Tees

Payment shall be made at the unit price bid under Bid Item No. 50 through Bid No. 52 in the Bid Form per each 12" x 12", 12" x 8", 12" x 6" mechanical joint tee, respectively, furnished, installed, and completed in place. Payment shall be full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under these items, in accordance with the plans, as directed by the Engineer and as specified herein.

Item No. 53 thru Item No. 55: 6", 8", and 12" Megalugs

Payment shall be made at the unit price under Bid Item No. 53 through Bid Item No. 55 in the Bid Form per each 6", 8", and 12" megalug, respectively, furnished, installed, and completed in place. Payment shall be full compensation for all labor, materials, tools, and equipment, and all incidentals necessary to complete the work under these items, in accordance with the plans, as directed by the Engineer and as specified herein.

Item No. 56: ¾" Diameter Threaded Steel Tie Rod Assembly (Complete in Place)

Payment shall be made at the unit price bid per each set of tie rods complete-in-place, regardless of length, under Bid Item No. 56 in the Bid Form which price shall include full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under this item, in accordance with the plans, as directed by the Engineer and as specified herein.

Item No. 57: Class B Cement Concrete Anchorage and/or Thrust Blocks

Payment shall be made at the unit price bid under Bid Item No. 57 in the Bid Form per each for Class B transit mixed cement concrete, complete in place, which unit price shall include full compensation for all labor, materials, tools, equipment and all incidentals necessary to complete the work as shown on the plans, as directed by the Engineer, and as specified herein.

Item No. 58 thru Item No. 60: 6", 8", and 12" Mechanical Joint Solid Sleeves or Couplings

Payment shall be made at the unit price bid under Bid Item No. 58 through Bid Item No. 60 in the Bid Form per each 6", 8", and 12" mechanical joint solid sleeve and/or coupling that is furnished and installed. Payment shall be full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under these items, as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 61: 6" Caps

Payment shall be made at the unit price bid under Bid Item No. 61 in the Bid Form per each 6" cap that is furnished and installed. Payment shall be full compensation for all labor, materials, tools and equipment, and all incidentals necessary to complete the work under these items, as shown on the plans, as directed by the Engineer and as specified herein.

Item No. 62: 2" Preformed Pipe Insulation with Plastic Jacketing

Payment shall be made at the unit price bid under Bid Item No. 62 in the Bid Form per linear foot of preformed insulation with plastic jacket complete-in-place, as shown on the plans and as specified herein. The contract unit price shall include the cost of all labor, materials, tools and equipment, and all incidentals, inclusive of any special detailed fitting, cutting, handling and/or sealants that are necessary to complete the work under this item, as shown on the plans, as directed by the Engineer, and as specified herein.

Item No. 63: Test Pit to Determine Water Service Tubing Type

Payment shall be made at the unit price bid under Bid Item No. 63 in the Bid Form per each test pit dug to determine service-tubing type. Payment shall be full compensation for pavement cutting and removal, excavation, sheeting, shoring, dewatering, determination of water service tubing type, backfill material, backfilling, and compaction of the backfill, and restoration of the surface including temporary and permanent pavement, all as required by the Contract Documents. If the water service tubing is determined to not be copper, then it shall be replaced and paid for under Bid Item No. 64 through Bid Item No. 72. Water service tubing that is determined to be copper shall be left in place. For service tubing that is left in place, the Contractor shall install a new corporation on new water main, and tie over the existing service line with a coupling, which will be paid for under standard applicable items only when such items have been made part of this contract otherwise the Contractor is to furnish and install these materials as part of this item. No payment will be made under this item unless the Owner orders the test pit or it is required in the contract drawings.

Item No. 64: 1" Copper Water Service Tubing

Under Bid Item No. 64 the Contractor will be paid the contract unit price per linear foot for furnishing, trenching, laying, and the subsequent backfilling of one (1) inch copper tubing respectively, complete in place, inclusive of the excavation and the removal of all unsuitable material(s).

Under Bid Item No. 64 the unit prices shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under these items as shown on the plans, as directed by the Engineer, and as specified herein, inclusive of sawcutting, excavation, and the disposal of all undesirable material(s), backfilling, as-built ties, and notifications.

Item No. 65 and Item No. 66: 1" Corporation, Curb Stop, & Box

Under Bid Item No. 65 and Bid Item No. 66, the Contractor will be paid the contract unit price for furnishing and installing each corporation cock of each size specified and each curb stop and box of each size specified complete in place.

Under Item No. 65 and Bid Item No. 66, the unit prices shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under these items as shown on the plans, as directed by the Engineer, and as specified herein, inclusive of excavation and the disposal of all undesirable material(s), backfilling, as-built ties, and notifications.

Item No. 67: Nominal 5/8" – 1" Water Service Pipe Fitting

Under Bid Item No. 67 the Contractor will be paid the contract unit price for furnishing and installing each fitting of each size specified, respectively, complete in place.

Under Bid Item No. 67, the unit prices shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under these items as shown on the plans, as directed by the Engineer, and as specified herein, inclusive of excavation and the disposal of all undesirable material(s), backfilling, as-built ties, and notifications.

Item No. 68: 1.5" Copper Water Service Tubing

Under Bid Item No. 68, the Contractor will be paid the contract unit price per linear foot for furnishing, trenching, laying, and the subsequent backfilling of one and a half (1.5) inch copper tubing, respectively, complete in place, inclusive of the excavation and the removal of all unsuitable material(s).

Under Bid Item No. 68, the unit prices shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under these items as shown on the plans, as directed by the Engineer, and as specified herein, inclusive of excavation and the disposal of all undesirable material(s), backfilling, as-built ties, and notifications.

Item No. 69 and Item No. 70: 1.5" Corporation, Curb Stop, & Box

Under Bid Item No. 69 and Bid Item No. 70, the Contractor will be paid the contract unit price for furnishing and installing each corporation cock of each size specified and each curb stop and box of each size specified complete in place.

Under Item No. 69 and Bid Item No. 70, the unit prices shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under these items as shown on the plans, as directed by the Engineer, and as specified herein, inclusive of excavation and the disposal of all undesirable material(s), backfilling, as-built ties, and notifications. Owner will provide meter pits, if needed. Cost for installation of meter pits will be paid under this Bid Item No. 69.

Item No. 71: 1.25" Water Service Pipe Fitting

Under Bid Item No. 71, the Contractor will be paid the contract unit price for furnishing and installing each fitting of each size specified respectively, complete in place.

Under Bid Item No. 71, the unit prices shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under these items as shown on the plans, as directed by the Engineer, and as specified herein, inclusive of excavation and the disposal of all undesirable material(s), backfilling, as-built ties, and notifications.

Item No. 72: 1.5" Water Service Pipe Fitting

Under Bid Item No. 72, the Contractor will be paid the contract unit price for furnishing and installing each fitting of each size specified respectively, complete in place.

Under Bid Item No. 72, the unit prices shall include full compensation for all labor, materials, tools and equipment and all incidentals necessary to complete the work under these items as shown on the plans, as directed by the Engineer, and as specified herein, inclusive of excavation and the disposal of all undesirable material(s), backfilling, as-built ties, and notifications.

Item No. 73: Temporary By-Pass Piping

Payment shall be made at the unit price bid per lump sum price under Bid Item No. 73 in the Bid Form. Payment shall be full compensation for preparation and submittal of a temporary by-pass plan, furnishing and installing temporary pipe, cross trenches over roadways and driveways including temporary paving of all cross trenches at driveways and roadways, recessing of all piping, temporary water services, temporary hydrants (spaced every 500 feet), proper protection of temporary pipe, disinfecting, flushing, testing, connection to house service line, connection to existing system hydrants, and/or existing mains, maintenance and all labor and materials required by the Contract Documents. Contractor shall recess temporary bypass piping at all commercial aprons.

Item No. 74: Pressure Test, Leakage Test, & Disinfection of Water Mains

Payment shall be made at the unit price bid per lump sum under Bid Item No. 74 in the Bid Form for providing, installing and subsequently deactivating temporary (1") inch main cocks and copper 'goosenecks' and/or for providing, installing and subsequently deactivating temporary wheel valve equipped hydrant adaptors, and for the subsequent hydrostatic pressure and leakage tests. This work shall include the cost of the Consultant, and the disinfection and cleansing operations, and all related procedures, with regard to the new and permanent water main system(s) and the related water system components. The lump sum price shall include full compensation

for all labor, materials, tools, equipment, including any temporary plugs required, and all incidental work necessary to complete the work under this item in accordance with the plans, as directed by the Engineer and as specified herein. Water sampling shall be paid under Bid Item No. 75.

Item No. 75: Water Sampling (by Laboratory Personnel)

Payment shall be made at the full invoice amount under Bid Item No. 75 in the Bid Form for the field and laboratory charges incurred for water sampling, sterile containers, the issuance of the numerous Certificates of Analysis, which payment shall be full compensation for all labor, tools, equipment and all incidental work necessary to complete the work under this item as shown on the plans, as directed by the Engineer and as specified herein.

The original paid invoice issued by the laboratory billing authority must be submitted to the Engineer for reimbursement under this item. In no case shall the City of Newton be obligated to pay more for these testing services than the reasonable cost of the prevailing industry rates for water sampling of a similar nature.

Item No. 76: Supply & Deliver Rust & Stain Remover as Required

Payment shall be made at the unit price per each twenty-four count @ 4 oz. cartons under Bid Item No. 76. Payment shall be full compensation for all labor, material, and all incidental work necessary to complete the work under this item as directed by the Engineer and as specified herein.

Item No. 77: Cleaning and Lining Pits

Payment shall be made at the unit price per each under Bid Item No. 77 in the Bid Form. Payment shall be full compensation for excavation, shoring, dewatering, removal and legal disposal of unsuitable material; furnishing, installing and the compaction of the refill material, all as required by the Contract Documents.

Item No. 78: Additional Cleaning and Lining Pits Beyond the Scope of Work

Payment shall be made at the unit price per each under Bid Item No. 78 in the Bid Form. Payment shall be full compensation for excavation, shoring, dewatering, removal and legal disposal of unsuitable material; furnishing, installing and the compaction of the refill material for all pits beyond the scope of work, all as required by the Contract Documents. No payment will be made under this item unless additional cleaning and lining pits are ordered by the Owner.

Item No. 79: Mismarked Main (Cleaning & Lining Trenches Only)

Payment shall be made at the unit price per each under Bid Item No. 79 in the Bid Form. Payment shall be full compensation for all work required to determine a mismarked main, repair and backfill the pipe, traffic control, etc.

Item No. 80: Existing Drainage Repair (All Sizes)

Payment shall be made at the unit price per linear foot noted under Bid Item No. 80 in the Bid Form.

Payment shall be full compensation for repair of all sizes of existing drainage damaged during construction as a result of the location not being marked or the location being mismarked by more than 5 feet, and shall include SDR 35 PVC pipe, Fernco couplings, excavation, removal and disposal of unsuitable material and replacement with acceptable backfill material, dewatering, shoring, bedding, backfilling and compacting, and restoration of private and public property to original condition. Pavement cutting, temporary trench paving, leveling course, removal/resetting and replacement of curbing, restoration of concrete or bituminous sidewalks and/or driveways to original condition, removal and disposal of existing concrete or pavement, loaming and seeding and testing will be paid for under the respective bid items.

Crushed stone, reset curb, reconstruction of bituminous berm, sidewalks, driveway aprons, loam borders, and roadway pavement shall be paid under standard applicable items only when such items have been made part of this contract otherwise the Contractor is to furnish and install these materials as part of this item.

Item No. 81: Silt Sacks

Payment shall be made at the unit price per each under Bid Item No. 81 in the Bid Form. Payment shall be full compensation for furnishing, placing, staking, maintaining, and removing Silt Sacks. Payment shall include proper disposal of collected sediments as required during construction and proper disposal of Silt Sacks at the completion of all work.

Item No. 82: Existing Sewer Service Repair (All Sizes)

Payment shall be made at the unit price per each noted under Bid Item No. 82 in the Bid Form.

Payment shall be full compensation for repair of all sizes of existing sewer services damaged during construction as a result of the location not being marked or the location being mismarked by more than 5 feet, and shall include SDR 35 PVC pipe, Fernco couplings, excavation, removal and disposal of unsuitable material and replacement with acceptable backfill material, dewatering, shoring, bedding, backfilling and compacting, and restoration of private and public property to original condition. Pavement cutting, temporary trench paving, permanent trench paving, removal/resetting and replacement of curbing, restoration of concrete or bituminous sidewalks to original condition, removal, and disposal of existing concrete or pavement, loaming and seeding and testing will be paid for under the respective bid items.

Item No. 83: Tree Protection

Payment shall be made at the unit price per each under Bid Item No. 83 in the Bid Form. Payment shall be full compensation for furnishing, placing and maintaining SDR35 PVC Pipe or recycled trex plastic for the purpose of protecting all trees 12 inches in diameter and larger within the work area during construction.

Item No. 84: Price Adjustment: Hot Mix Asphalt Mixtures

Payment shall be made from the cash allowance noted under Bid Item No. 84 in the Bid Form. Payment shall be full compensation for adjusting the unit cost per ton upward, for asphaltic concrete installed and in place, as a result of an increase in the price of liquid asphalt as described in Attachment B. The price increase shall only be applied to the liquid asphalt percentage of the asphalt tons installed. If the price decreases a credit shall be applied by change order to the contract.

Item No. 85: Price Adjustment: Fuel

Payment shall be made from the cash allowance noted under Bid Item No. 85 in the Bid Form. Payment shall be full compensation for adjusting the unit cost per gallon per cubic yard or gallon per ton upward, for fuel usage (diesel and gasoline) from excavation, backfilling, and surfacing work, as a result of an increase in the price of fuel as described in Attachment B. If the price decreases a credit shall be applied by change order to the contract.

END OF SECTION

SECTION 01027

APPLICATION FOR PAYMENT

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Comply with procedures described in this Section when applying for progress payment and final payment under this Contract.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.
- B. Progress payments are described in the General Conditions.
- C. Payments upon Substantial Completion and Completion of the Work are described in the General Conditions.

1.03 SUBMITTALS

- A. Informal Submittal: Unless otherwise directed by the Engineer:
 - 1. Make an informal submittal of Request for Payment by filling in, with erasable pencil, pertinent portions of AIA Document G702 "Application and Certificate for Payment" or EJCDC Document C-620 "Contractor's Application for Payment," plus continuation sheet or sheets.
 - 2. Make this preliminary submittal to the Engineer at the end of each month.
 - 3. Revise the informal submittal of Request for Payment as agreed, between both parties, initialing all copies.
- B. Formal Submittal: Unless otherwise directed by the Engineer:
 - 1. Make a formal submittal of Request for Payment by filling in the agreed data, by typewriter or neat lettering in ink, on AIA Document G702 "Application and Certificate for Payment" or EJCDC Document C-620 "Contractor's Application for Payment," plus continuation sheet or sheets.
 - 2. Sign and notarize the six (6) original Applications for Payment.
 - 3. Submit the originals of the Applications for Payment plus six (6) identical copies of the continuation sheet or sheets to the Engineer.
 - 4. The Engineer shall compare the formal submittal with the approved informal submittal and when approved, shall sign the Applications for Payment and forward them along with the continuation sheet or sheets to the Owner. Once executed by the appropriate officials, the Owner will distribute:
 - a. Two copies to Contractor
 - b. Two copies to Owner
 - c. Two copies to Engineer.

PART 2 PRODUCTS (Not Applicable).

PART 3 EXECUTION (Not Applicable).

END OF SECTION

SECTION 01050
FIELD ENGINEERING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide such field engineering services as are required for proper completion of the work including, but not necessarily limited to:
 - 1. Establishing and maintaining lines and levels.
 - 2. Structural design of shores, forms, and similar items provided by the Contractor as part of his means and methods of construction.

1.02 RELATED WORK

- A. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
- B. Additional requirements for field engineering may also be described in other Sections of these Specifications.

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for the proper performance of the work of this Section.

1.04 PROCEDURES

- A. In addition to procedures directed by the Contractor for proper performance of the Contractor's responsibilities:
 - 1. Locate and protect control points before starting work on the site.
 - 2. Preserve permanent reference points during progress of the work.
 - 3. Verification of all reference points.
 - a. If a discrepancy is found, promptly notify the Engineer.
 - 4. Promptly advise the Engineer when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.
 - a. Upon direction of the Engineer, require the Field Engineer to replace reference stakes or markers.
 - b. Locate such replacements according to the original survey control.

1.05 SURVEY REQUIREMENTS

- A. Contractor shall establish a minimum of two permanent benchmarks on site; referenced to data established by survey control points.
- B. Contractor to establish and maintain control lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements, including pavements, stakes for grading, fill and topsoil placement, utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, and floor elevations.
 - 4. Controlling lines and levels required for mechanical and electrical trades.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01092

ABBREVIATIONS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Listing of Abbreviations: The listing of abbreviations in this Specification Section represent the Standard Organization named.
- B. Related Work:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. All related Specification Sections shall be used in conjunction with this Section.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the Standard, except when more stringent requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving bids.

1.03 LISTING OF STANDARD ORGANIZATIONS AND THEIR ABBREVIATIONS

AA	Aluminum Association
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACPA	American Concrete Pipe Institute
ADC	Air Diffusion Council
AGA	American Gas Association
AGCA	Associated General Contractors of America
AHDGA	American Hot Dip Galvanizers Association
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Constructors
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
BIA	Brick Institute of America
CRSI	Concrete Reinforcing Steel Institute
CSA	Canadian Standards Association
DCAM	Comm. of Massachusetts Division of Capital Asset Management
DEP	Department of Environmental Protection
DHI	Door and Hardware Institute
DIPRA	Ductile Iron Pipe Research Association
EJCDC	Engineers Joint Contract Documents Committee
EPA	Environmental Protection Agency
FM	Factory Mutual
Fed. Spec.	Federal Specification
HI	Hydraulic Institute
IEEE	Institute of Electrical and Electronics Engineers
ISA	Instrument Society of America

ISO	International Standards Organization
MIA	Masonry Institute of America
MIL	Military Specification
MSBC	Massachusetts State Building Code
MSS	Manufacturers Standardization Society of the Valve and Fitting Industry
NAAMM	National Association of Architectural Metal Manufacturers
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NRCA	National Roofing Contractors Association
NSPC	National Standard Plumbing Code
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PPI	Plastic Pipe Institute
PS	Product Standards of the National Bureau of Standards
SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPI	Society of the Plastics Industry
SSPC	Steel Structures Painting Council
TCA	Tile Council of America
TPI	Truss Plate Institute
UL	Underwriters Laboratories

END OF SECTION

SECTION 01100

SPECIAL PROJECT PROCEDURES

PART 1 GENERAL

1.01 DESCRIPTION

- A. The Work of this section consists of special project procedures during construction including:
1. Construction Sequence
 2. Permits
 3. Contractor's Emergency Service
 4. Pipe Locations
 5. Protection of Underground Facilities and Damages Thereto
 6. Disposal of Excavated Pipe and Construction Debris
 7. Groundwater Conditions
 8. Separation of Water Lines from Sewers
 9. Pavement Schedule
 10. Police Details
 11. Water Service Replacement
 12. Temporary By-Pass Piping
 13. Gravel Borrow
 14. Sidewalks & Curb Restoration
 15. Concrete Roadway Restoration
 16. Tree Protection
 17. MWRA Water Mains
 18. Hot Mix Asphalt, Diesel Fuel, and Gasoline Price Adjustments
 19. Additional Work
 20. Schedules
 21. American Disability Act (ADA) Compliance
 22. Commonwealth of Massachusetts COVID-19 Guidelines and Procedures for All Construction Sites and Workers at All Public Work
 23. Variable Message Boards

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION

3.01 CONSTRUCTION SEQUENCE

- A. The construction sequence will be established at the preconstruction conference. Contractor shall construct water mains in sequence as requested by the Owner. No additional compensation will be provided due to the sequence selected or modification thereof during construction.
- B. Contractor is responsible for notifying residents in writing at least 24 hours in advance of water service shutdowns.

3.02 PERMITS

- A. The Contractor is required to obtain a Street Opening Permit. The cost of the permit shall be included under the mobilization pay item.
- B. The Contractor is required to obtain a Trench Opening Permit. The cost of the permit shall be included under the mobilization pay item.

3.03 CONTRACTOR'S EMERGENCY SERVICE

- A. Any Contractor whose place of business is located beyond the vicinity of the site of the Work and who does not maintain local headquarters 24 hours a day must provide the following:

1. Make satisfactory arrangements with the Owner to service emergencies or complaints which may occur at night, over the weekend, or when the job is shut down. If he does not, the Owner may make arrangements and the cost will be charged to the Contractor.
- B. Before the final estimate is certified for payment, the Contractor shall make similar arrangements to cover the guarantee period.

3.04 PIPE LOCATIONS

- A. New water main appurtenances installed under this Contract will be located substantially as indicated on the Drawings, but the Engineer reserves the right to make such modifications in location and grade as may be found desirable to avoid interference with existing structures and/or underground facilities or to avoid unsatisfactory locations, all as he may see fit as in the best interests of the Owner.

3.05 PROTECTION OF UNDERGROUND FACILITIES AND DAMAGES THERETO

- A. The Contractor shall notify all utility companies of his operations sufficiently in advance of construction and take all measures necessary to avoid damage or undue interruption to the utilities' normal services.
- B. Where indicated on the Drawings, directed, or permitted at the Contractor's request, the Contractor shall dig test pits to locate the various underground facilities.
 1. Size of test pit and method of payment shall be as specified in Section 02015 of these Specifications.
- C. The Contractor shall pay, at no additional expense to the Owner, all costs associated with:
 1. Protecting and supporting underground facilities.
 2. Repairing, replacing, or relocating underground facilities which are damaged by the Contractor's operations.
 3. Temporarily or permanently relocating underground facilities for the Contractor's convenience.
- D. The Contractor shall take all prudent steps to make himself aware of the physical condition of the existing underground facilities expected to be encountered.
 1. Claims by the Contractor for repair of damages alleged to be the result of the physical condition or faulty installation workmanship of the existing underground facilities, outside of the specified trench width, will in general not be considered by the Owner for extra work payment.
 2. For such underground facilities within the specified trench width, claims will be considered if, in the opinion of the Engineer, such damage was unavoidable.
- E. Silt Sacks to be used on all catch basins within project areas to minimize silt deposits into drainage system.

3.06 DISPOSAL OF EXCAVATED PIPE AND CONSTRUCTION DEBRIS

- A. The Contractor shall contact the Department of Environmental Protection, Division of Solid Waste, for approval of the demolition waste landfill chosen for disposal of the excavated pipe and construction debris. All excavated pipe and construction debris shall be disposed legally by the Contractor at no expense to the Owner.

3.07 GROUNDWATER CONDITIONS

- A. Exact groundwater conditions due to season fluctuations shall be verified by the Contractor. It is the Contractor's responsibility to perform all work related to dewatering at no additional cost to the Owner.

3.08 SEPARATION OF WATER LINES FROM SEWERS

- A. Parallel Installation: Water mains shall in general be laid at least 10 feet horizontally from any existing sewer. The distance shall be measured edge to edge.
 1. In cases where it is not practical to maintain a ten foot separation, it is permitted to install a water main closer to a sewer, provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer.
- B. Crossings: Water mains and services crossing sewers shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer.

1. At the crossing, one full length of water pipe shall be located so both joints will be as far from the sewer as possible. The water main shall then be encased in a minimum of 6-inches of concrete for a distance of 6 feet on both sides of the sewer line.

C. Sewer Manholes: No water pipe shall pass through or come in contact with any part of a sewer manhole.

3.09 PAVEMENT SCHEDULE

A. All work within the paved roadway in the project extents shall receive temporary trench pavement (4-inch total thickness, including 2.5-inches of 3/4-inch binder course pavement and 1.5-inches of top course pavement), and permanent 1.5-inch trench milling and overlay, include 6-inches on either side of the water main trench edges.

B. Temporary trench pavement shall be installed weekly. Contractor shall install temporary trench pavement at intersections and cross trenches within one (1) day of backfilling. Permanent Trench Paving shall be completed a minimum time period, specified by the Owner, after temporary trench pavement has been installed. Owner reserves the right to request pavement installation at more frequent intervals if weather or other conditions make it necessary. There will be no additional compensation for changes in the paving schedule.

C. The Contractor is responsible for maintaining all trenches and paving all open cut trench areas every Friday throughout the duration of the project. Paving may be required more often if rain is expected.

D. The Contractor is required to install cold patch when requested by the Owner.

3.10 POLICE DETAILS

A. Prior to the start of construction, the Contractor shall familiarize himself and adhere to the scheduling requirements of the Newton Police Department. It is the Contractor's responsibility to arrange for the details directly with the Police Department, as well as receive approval from the Owner regarding the level of police effort required.

B. The Contractor shall submit a formal traffic plan on drawings with schedules to the City for review prior to the start of construction. All costs associated with the preparation and submittal of the traffic plan shall be included in the unit price bid for the various pipe-laying items as outlined in Section 01025 – Measurement and Payment.

C. The Owner will reimburse the contractor for police invoices.

3.11 WATER SERVICE REPLACEMENT

A. Contractor shall note that existing water services determined to be a material other than copper shall be replaced. A test pit shall be dug at each water service to determine the service type material, if it is currently unknown, as stated in the Contract Documents. The new service shall be replaced to the existing property line with a new corporation and curb stop.

B. All existing water services that have been in service for more than 20 years based on the City's records, regardless of existing material, shall be replaced under this Contract.

3.12 TEMPORARY BY-PASS PIPING

A. Prior to the start of construction, a temporary by-pass piping system shall be installed, chlorinated, and tested by Contractor according to Contract Documents. Upon approval by Owner, temporary water services shall be installed. Upon completion of new water main and cleaned and lined areas, tie overs, and service connections, the temporary by-pass piping shall be removed by the Contractor. The Contractor shall maintain temporary by-pass system and protect from damage throughout the duration of the project. Contractor shall coordinate all temporary water operations with the City of Newton.

B. The location and method of providing service for the temporary by-pass piping shall be the responsibility of the Contractor. Contractor shall submit a by-pass piping plan for Engineer's approval. Contractor shall note that by-pass piping system shall provide the same service requirements that existing water system served. The Contractor shall provide at a minimum, a 4-inch diameter and 2-inch diameter by-pass line for each street throughout the project extents and 6-inch fire service lines.

- C. All temporary by-pass piping shall be recessed.
- D. At locations where temporary services cross the road, services shall be adequately protected in a solid sleeve, placed in a trench of adequate depth and covered with bituminous pavement to prevent breakage during construction of the new water main. All temporary service crossings shall be maintained throughout the duration of the project.

3.13 GRAVEL BORROW

- A. The Contractor's attention is directed to the gravel borrow item on the general bid form. Contractor shall install gravel borrow when directed by the Engineer and Owner to replace unsuitable backfill material.

3.14 SIDEWALKS & CURB RESTORATION

- A. Any sidewalks, curbs, and walks disturbed by the Contractor shall be replaced in kind throughout the project area.

3.15 CONCRETE ROADWAY RESTORATION

- A. Any roadways that are constructed of concrete and steel reinforcing bar that are disturbed as a result of the project construction shall be restored with 4-inches of Bituminous Concrete Type I-1 placed in two lifts and flush with the existing pavement.
- B. All access pits installed in area of concrete roadway shall be backfilled with excavatable control density fill or adequately compacted material at the discretion of the City.

3.16 TREE PROTECTION

- A. Contractor shall protect all trees within work area. The protective means shall include fitted surround of SDR35 PVC Pipe sections or 2"x4"x8' recycled trex plastic. See detail sheet C-4.

3.17 MWRA WATER MAINS

- A. Contractor to provide at least 72-hour prior notice to the MWRA's Inspection Department by calling Warren Murphy (617) 305-5833, located at 2 Griffin Way, Chelsea, MA 02150. See Attachment C for MWRA – Exhibit A – Additional Conditions.

3.18 ADDITIONAL WORK

- A. The City reserves the right to add project areas to the program which will be paid under the current bid prices.

3.20 SCHEDULES

- A. Work on busy roadways and roadways near schools shall only take place between the hours of 9:00 AM and 3:00 PM. Roadways with this time restriction will be determined by the Engineer and communicated to the Contractor at the preconstruction conference.
- B. No work shall occur on Rosh Hashanah and Yom Kippur.

3.21 AMERICAN DISABILITY ACT (ADA) COMPLIANCE

- A. Contractor is responsible for maintaining safe passage, ADA compliance, and local safety guidelines and regulations for all roadways, driveways, and sidewalks for the duration of the work. All disturbed surfaces shall be restored to a condition in accordance with applicable federal, state, and local requirements including ADA compliance.

3.22 COMMONWEALTH OF MASSACHUSETTS COVID-19 GUIDELINES AND PROCEDURES FOR ALL CONSTRUCTION SITES AND WORKERS AT ALL PUBLIC WORK

- A. The General Contractor, as the responsible party for all safety practices and safety compliance measures at the construction site, shall bear sole responsibility for compliance with all guidelines, procedures, and directives outlined in the [Commonwealth of Massachusetts COVID-19 Guidelines and Procedures for All Construction](#)

Site and Workers at All Public Work document, dated March 25, 2020. All costs associated with compliance with these guidelines and procedures, either in their current form or any future modifications thereof, which are current as of the time of the bid, shall be paid for by the General Contractor. A web link to the guidelines and procedures is provided below.

<https://www.mass.gov/doc/march-25-2020-construction-guidance>

3.23 VARIABLE MESSAGE BOARDS

- A. Contractor shall supply two portable changeable message signs (PCMS) for the duration of the project. The Contractor shall erect, program, maintain, move, adjust, and relocate the message signs as necessary. The Contractor shall provide the Owner with a 48-hour notice prior to needing the two PCMS erected. The Contractor shall coordinate with the Owner on the original placement of the two PCMS one week prior to the start of construction.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 GENERAL

1.01 DESCRIPTION

A. Preconstruction Conference:

1. The Contractor shall not commence work until a conference has been held at which representatives of the Contractor, Engineer, and Owner are present. The preconstruction conference will be arranged by the Engineer.
2. The sequence of construction will be established during the preconstruction conference.

B. Progress Meetings:

1. The Contractor shall be available for progress meetings during construction if so required by the owner.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Individual requirements for submittals also may be described in pertinent Sections of these Specifications.
- B. Work Not Included:
 - 1. Submittals which are not required shall not be reviewed by the Engineer.
 - 2. The Contractor may require his subcontractors to provide drawings, setting diagrams and similar information to help coordinate the Work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Engineer unless specifically called for within the Contract Documents.

1.03 SHOP DRAWINGS AND SAMPLES

- A. The Contractor shall submit to the Engineer for review all shop drawings, catalog cuts, setting schedules and such other drawings as may be necessary for the prosecution of the work in the shop and in the field as required by the Contract Documents.
 - 1. Submittals which are incomplete or difficult to read shall be rejected.
 - 2. Deviations from the Contract Documents shall be called to the attention of the Engineer at the time of the first submission of shop drawings and other drawings for consideration.
 - 3. The Engineer's review of any drawings shall not release the Contractor from responsibility for such deviations.
 - 4. Shop drawings shall be submitted with such promptness as to cause no delay in the Contractor's work or the work of any other Contractor.
 - 5. Schedules for reinforcing steel shall receive the Contractor's immediate attention, upon award of Contract.
- B. When submitted for the Engineer's review, all shop drawings shall bear the Contractor's certification that he has reviewed, checked and approved the shop drawings, that they are in compliance with the requirements of the Contract Documents, and that he has verified all field measurements and construction criteria, materials, catalog numbers and similar data.
- C. All samples called for in the Specifications or required by the Engineer shall be furnished by the Contractor and shall be submitted to the Engineer for his review.
 - 1. Samples shall be furnished so as not to delay fabrication, and to allow the Engineer reasonable time for the consideration of the samples submitted.
- D. Checking of submittals is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents.
 - 1. Any action shown is subject to the requirements of the Contract Documents.
 - 2. Contractor is responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.
- E. The Contractor may only proceed with fabrication and construction for items on returned submittals marked "1-No Exception Taken" or "2-Make Corrections Noted."
 - 1. Resubmit submittals if marked "3-Revise and Resubmit" or "4-Rejected."

- F. The Contractor shall identify each submittal numerically in accordance with the following format: [SPECIFICATION SECTION] - [SUBMITTAL NUMBER] - [RESUBMITTAL].
1. The first number corresponds to the specification section under which the particular shop drawing is submitted.
 2. The second number is the numerical order of the submittal within a particular specification section based on when the submittal is transmitted.
 3. The third number is zero for an original submittal. The first resubmittal of a shop drawing previously reviewed by the Engineer, if necessary, shall be identified by the same numbering system with (-A) used as a suffix to indicate it is a resubmittal. Each additional resubmittal shall be identified by the same numbering system with the following letter alphabetically used as the suffix.
 4. For example, 02200-1-0 is the original submittal for the first shop drawing submitted under specification section 02200. 02200-2-A is the resubmittal for the second shop drawing submitted under specification section 02200.
- G. The Contractor shall furnish such samples of material as may be required for examination and testing.
1. All samples of materials for tests shall be taken according to ASTM specifications or as provided in the Contract Documents.
- H. Within 14 days of the date fixed in the Notice to Proceed, the Contractor shall submit a Schedule of Submittals to the Engineer for review and approval in accordance with the General Conditions. The Schedule of Submittals including, but not limited to, shop drawings and samples shall include a list of required submittals, the date when each submittal will be transmitted for review and approval, and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor shall transmit all shop drawings to the Engineer in electronic (PDF) format.
- B. The intent of the electronic submittals is to expedite the construction process reducing paperwork, improving information transfer, and decreasing administration time.
- C. The electronic submittal process is not intended to replace the requirement to submit actual color samples or physical material samples for review and approval by the Engineer.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 GENERAL

1.01 SUMMARY

- A. To assure adequate planning and execution of the work so that the Work is completed within the number of calendar days allowed in the Contract, and to assist the Engineer in appraising the reasonableness of the proposed schedule and in evaluating progress of the Work, prepare and maintain the schedules and reports described in this Section.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
- B. Definitions:
 - 1. "Day," as used throughout the Contract unless otherwise stated, means "calendar day."

1.03 QUALITY ASSURANCE

- A. Reliance upon the approved schedule:
 - 1. The construction schedule as approved by the Engineer shall be an integral part of the Contract and shall establish interim completion dates for the various activities under the Contract.
 - 2. Should any activity not be completed within 15 days after the stated scheduled date, the Engineer may request the reason for the delay in schedule from the Contractor. The Contractor shall supply the requested information and the steps which he intends to take to get back on schedule.
 - 3. It is expressly understood and agreed that failure by the Engineer to exercise the option either to order the Contractor to expedite an activity or to expedite the activity by other means shall not be considered to set a precedent for any other activities.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Within 14 calendar days of the date fixed in the Notice to Proceed, submit a proposed construction schedule to the Engineer for review.
 - 1. Schedule shall include expected dates for beginning and completing various activities which make up the work, expected duration of activities, and expected milestone dates.
 - 2. Work shall not commence on the project until the schedule has been approved by the Engineer.
- C. Periodic Reports: Contractor shall monitor the schedule regularly and submit periodic updates to the Engineer.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01385

PRE-CONSTRUCTION VIDEO RECORDING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: The Contractor shall provide all labor, materials, tools, and equipment necessary to furnish a video recording of the site prior to the start of the work.

1.02. RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and all Divisions of these Specifications.

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 VIDEO RECORDING

- A. Equipment
 - 1. The equipment employed in the video recording shall be sufficient to provide a clear, full color and detailed visual description of the site along with a detailed narrative description of physical conditions and location.
- B. Area Included
 - 1. The area included in the video recording shall include the actual location of the work, the adjacent property and all other areas which could reasonably be anticipated to be affected by the work.
 - 2. Particular attention should be paid to the existing condition of private property immediately adjacent to the work.
- C. Documentation
 - 1. The video recordings shall be conducted at a slow walking pace and shall record the physical conditions in the area described above.
 - 2. The narrative description shall be recorded simultaneously and shall supplement the visual description particularly with regard to location.
 - 3. Contractor shall furnish three (3) complete copies of the video recording to the Engineer prior to the start of the work.
- D. Personnel
 - 1. All personnel employed by the Contractor in video recording shall be experienced in all aspects of the process, including recognition of important physical conditions in and around the site of the Work.

END OF SECTION

SECTION 01505

MOBILIZATION

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Includes: The transportation and storage of all equipment and materials necessary to the Work and the field offices.
- B. RELATED WORK
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 thru Division 3 of these Specifications.

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION

3.01 STORAGE AREA

- A. It shall be the Contractor's sole responsibility to procure and maintain a suitable storage area for tools, materials, and equipment necessary to perform the work.
 - 1. The storage area obtained by the Contractor shall not obstruct or interfere with pedestrian or vehicular movement, and shall not occupy any space within the public right-of-way, except with specific permission from the Owner.
 - 2. The storage area shall be kept neat at all times.
 - 3. The Owner shall not be a party to negotiations related to acquisition of areas for storage or cleanup of the same (unless the storage area is on Owner's property), but reserves the right to inspect such area(s) for compliance with City regulatory requirements.
 - 4. Contractor shall not use storage area for bulk storage of hazardous materials (e.g., gasoline, solvents, oil).

3.02 EQUIPMENT

- A. Contractor shall transport all equipment to the site, assemble the equipment as needed to proceed with the work and maintain the equipment as needed during the work.

END OF SECTION

SECTION 01510

TEMPORARY FACILITIES

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work of this Section shall consist of providing the following temporary facilities:
 - 1. Water,
 - 2. Sanitary Facilities,
 - 3. Drainage,
 - 4. Heat and Weather Protection.

PART 2 PRODUCTS

2.01 TEMPORARY WATER

- A. Drinking water shall be provided by the Contractor for his personnel and the personnel of his sub-contractors.
 - 1. Drinking water shall be tested and approved by the State Agency as "safe drinking water suitable for human consumption."
 - 2. Contractor shall furnish water for construction.

2.02 TEMPORARY SANITARY FACILITIES

- A. Sanitary conveniences, properly screened from public observation, for the use of all persons employed on the work and beginning with the first man engaged in preliminary operations, shall be provided and maintained by the Contractor in sufficient numbers through the completion of the work.
 - 1. Contractor shall be diligent in maintaining sanitary facilities, pumping weekly, or more often as required to protect soil and water quality.

2.03 TEMPORARY DRAINAGE

- A. Temporary drainage, as necessary shall be provided by the Contractor to keep the working area dry.

2.04 HEAT AND WEATHER PROTECTION

- A. Temporary heat and weather protection shall be provided as required by Chapter 149 of Massachusetts General Law, Section 44G.

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01545

PROTECTION OF PROPERTY

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: The Contractor shall provide all necessary protection of existing property to prevent any damage to property adjacent to the construction.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 thru Division 3 of these Specifications.

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION

3.01 PROTECTION OF PROPERTY

- A. The Contractor shall, at his own expense, preserve and protect from injury all property either public or private along and adjacent to the line of work, and be responsible for and repair any and all damage and injury thereto, arising out of or in consequence of any act or omission of the Contractor.
 - 1. All existing pipes, culverts, poles, wires, fences, mailboxes, stone walls, curbs, bounds, etc., shall be temporarily removed, supported in place or otherwise protected from injury, and shall be restored to at least as good condition as that in which they were found immediately prior to the start of work.
 - 2. Lawns, shrubs, bushes, planting beds and decorative trees disturbed or damaged shall be restored to a condition equal to that found prior to the start of construction, either by temporary transplant or replacement in kind, except as otherwise indicated on the Drawings.
 - 3. Property, which has been damaged and replaced, shall be equal in quality and workmanship to the damaged property and shall be subject to the approval of the property owner.
 - 4. Branches, which interfere with construction, may be removed, only upon approval of the Tree Warden.
 - a. Limbs and branches shall be trimmed off neatly and cleanly, close to the trunk of the tree or to its main branch. The cut surfaces shall be coated with an approved tree wound coating.

END OF SECTION

SECTION 01567

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work covered by this section of the specifications consists of furnishing all labor, materials, equipment and services, and performing all work required for the prevention of environmental pollution during and as a result of construction operations under this contract.
- B. The requirements set forth in this section of the specifications apply to any areas adjacent to wetlands, unless otherwise specifically stated.
- C. All work under this Contract shall be in accordance with the conditions stated herein and in the GENERAL CONDITIONS. The Order of Conditions issued by the local Conservation Commission apply to this Contract and all conditions and requirements shall be met by the Contractor.
- D. All erosion control devices shall be constructed or installed prior to beginning any form of excavation, grading, placement of materials, or general construction.
- E. Insofar as possible, construction activities shall be confined to those areas defined by the plans and specifications. All land resources within the project shall be preserved in their present condition or be restored to a condition after completion of construction at least equal to that which existed prior to work.
- F. The location of storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared, as approved.
- G. Adequate measures for erosion and sediment control such as the placement of baled hay or straw around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.
- H. Any water that is pumped and discharged from an excavation shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.
- I. The pumped water shall be filtered through baled hay, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than one foot per second. The sediment shall be cleared from the channel periodically.
- J. In order to trap sediment and to prevent sediment from clogging drainage systems, baled hay or straw shall be used as shown on the following detail(s) or as directed by the Owner. Care shall be taken to keep them from breaking apart. The bales should be securely staked to prevent overturning, flotation, or displacement. All deposited sediment shall be removed periodically.
- K. Where material or debris has washed or flowed into or has been placed in existing watercourses, ditches, drains, pipes or structures, such material or debris shall be entirely removed and satisfactorily disposed of during progress of the work, and the ditches, channels, drains, pipes, structures, and work shall, upon completion of the work, be left in a clean and neat condition.

PART 2 PRODUCTS

2.01 HAY BALES

- A. Hay bales shall be made of hay with forty pounds minimum weight and one hundred and twenty pounds maximum weight. Wood stakes shall be a minimum of one inch by one-inch nominal size by a minimum of three feet long.

2.02 SILT FENCE

- A. The silt fence shall consist of a 3-foot wide continuous length sediment control fabric, stitched to a 25-foot wide continuous length support netting, and stapled to preweathered oak posts spaced at a maximum of 7-feet. The

oak posts shall be 2-inches by 2-inches by 4-feet 6-inches and shall be tapered. The support netting shall be industrial strength polypropylene. The sediment control fabric should conform to the following properties:

1. Minimum weight of 2.5 oz/sy (ASTM D3776-79)
2. Minimum thickness of 17 mils (ASTM D1777-79)
3. Minimum tear strength of 65 lbs. (ASTM D1117-80)
4. Minimum burst strength of 210 psi (ASTM D3786-80)
5. Minimum coeff. of permeability of 0.0009 cm/sec.
6. Equivalent opening size (EOS) 20 (U.S. Standard Sieve)
7. Water flow rate of 40 gal/min/st.

- B. Sediment control fabric shall be non-rotting, acid and alkali resistant and have sufficient strength and permeability for the purpose intended, including handling and backfilling operations. Fibers shall be low water absorbent. The fiber network must be dimensionally stable and resistant to delamination. The fabric shall be free of any chemical treatment or coating that will reduce its permeability. The fabric shall also be free of any flaws or defects which will alter its physical properties. Torn or punctured fabrics shall not be used. For each specific use, only commercially available fabric which is certified in writing by the manufacturer for the purpose intended shall be used. The Contractor shall submit a two-foot square sample of each type of fabric to be used, along with technical data sheet and certified test reports. The Owner reserves the right to reject any fabric which he deems unsatisfactory for a specific use. The brand name shall be labeled on the fabric or the fabric container.
- C. Fabrics which are susceptible to damage from sunlight or heat shall be so identified by suitable warning information on the packaging material. Fabrics susceptible to sunlight damage shall not be used in any installations where exposure to light will exceed 30 days, unless specifically authorized in writing by the Owner.

2.03 SILT SACKS

- A. Silt filtering system for catch basins accepting drainage from the site shall be Siltsack as manufactured by ACF Environmental Inc. Richmond, VA. And distributed by A. H. Harris, or approved equal.
1. Manufactured to fit opening of catch basins or drop inlet.
 2. Two dump straps attached to the bottom to facilitate emptying the sack.
 3. Lifting loops as an integral part of the Siltsack to be used in lifting the Siltsack from the basin
 4. A restraint cord approximately halfway up the sack to keep the sides away from the catch basin walls.
 5. Manufactured from woven polypropylene fabric with the following properties:
 - a. Grab Tensile ASTM D-4632 300 lbs.
 - b. Grab Elongation ASTM D-4632 20%
 - c. Puncture ASTM D-4833 120 lbs.
 - d. Mullen Burst ASTM D-4386 800 psi.
 - e. Trapezoid Tear ASTM D-4533 120 lbs.
 - f. Apparent Opng. ASTM D-4751 40 US Sieve
 - g. Flow Rate ASTM D-4491 40 gpm/sf

PART 3 EXECUTION

3.01 NOTIFICATION

- A. The Owner will notify the Contractor in writing of any non-compliance with the foregoing provisions. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails to act promptly, the Owner may order stoppage of all or part of the work until satisfactorily corrective action has been taken. No claim for an extension of time or for excess costs or damage incurred by the Contractor as a result of time lost due to any stop orders shall be made unless it was later determined that the Contractor was in compliance.

3.02 AREAS OF CONSTRUCTION ACTIVITY

- A. Insofar as possible, the Contractor shall confine his construction activities to those areas defined by the plans and specifications. All land resources within the project boundaries under this contract shall be preserved in their present condition or be restored to a condition after completion of construction at least equal to that which existed prior to work under this contract.

3.03 PROTECTION OF WATER RESOURCES

- A. The Contractor shall not pollute streams, wetlands, or ponds with fuels, oils, bitumens, calcium chloride, acids or harmful materials. It is the Contractor's responsibility to comply with all applicable Federal, State, County and Municipal laws regarding pollution of rivers, wetlands and streams.
- B. Special measures should be taken to insure against spillage of any pollutants into public waters.

3.04 LOCATION OF STORAGE AREAS

- A. The location of the Contractor's storage areas for equipment and/or materials shall be upon portions of the job site and shall require written approval of the Owner. Plans showing storage facilities for equipment and materials shall be submitted for approval of the Owner.
- B. Adequate measures for erosion and sediment control, such as the placement of baled hay or straw around the downstream perimeter of stockpiles, shall be employed to protect any downstream areas from siltation.
- C. The Owner may designate a particular area or areas where the Contractor may store materials used in his operations.

3.05 DISCHARGE OF DEWATERING OPERATIONS

- A. Any water that is pumped and discharged from an excavation as part of the Contractor's water handling shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.
- B. The pumped water shall be filtered through baled hay, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than 1 foot per second. The sediment shall be cleared from the channel periodically.

3.06 PROTECTION OF AIR RESOURCES

- A. During the progress of work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of water as necessary, so as to minimize the creation and dispersion of dust.
 - 1. If the Engineer decides that it is necessary to use calcium chloride for more effective dust control, then the Contractor shall furnish and apply the material as directed.
 - 2. Calcium chloride shall be commercial grade, furnished in 100-pound, 5-ply bags, stored under weatherproof cover and stacked alternately for ventilation.
 - 3. Application for dust control shall be at the rate of about 1/2 pound per square yard per application.
- B. Burning of rubbish and waste material on the site shall not be permitted.

3.07 SEPARATION AND REPLACEMENT OF TOPSOIL

- A. Topsoil shall be carefully removed and separately stored to be used again as directed. The topsoil shall be stored in an area acceptable to the Owner and adequate measures shall be employed to prevent erosion of said material.

3.08 BALED HAY OR STRAW

- A. To trap sediment and to prevent sediment from clogging drainage systems, baled hay or straw shall be used where indicated on the drawings or where directed by the Owner. Care shall be taken to keep them from breaking apart. The bales should be securely staked to prevent overturning, flotation, or displacement. All deposited sediment shall be removed periodically.
- B. Bales shall be maintained or replaced until they are no longer necessary for the program intended or are ordered removed by the Owner.

3.09 SILT FENCE

- A. Where indicated on the drawings or where directed by the Owner, the Contractor shall erect and maintain a temporary silt fence. The silt fence shall be used specifically to contain sediment from runoff water and to minimize environmental damage caused by construction.
- B. The 4.5 foot oak posts shall be driven so that 2-feet remain above the ground. A 6-inch by 6-inch trench shall then be excavated at the base of the fence for the purpose of laying, backfilling and tamping, a minimum of 6-inches of the filter fabric.
- C. The Contractor shall remove the trapped sediment as soon as it reaches a depth of 1-foot or when directed by the Owner.
- D. The silt fence systems will be completely removed from the project at the completion of the project, unless specifically authorized by the Owner to be left in place.

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work under this Section shall consist of maintaining and protecting traffic in the project area to the satisfaction of the applicable Local Regulatory Agencies, and the Owner.
 - 1. Unless otherwise specified within the Contract Documents, the Contractor must maintain pedestrian and vehicular traffic and permit access to businesses, factories, residences, and intersecting streets.

PART 2 MATERIALS

2.01 TRAFFIC SIGNS

- A. The Contractor shall furnish light(s) and maintain traffic signs and specialty signboards as may be directed, or may be necessary for the safe regulation, or convenience of traffic.
 - 1. Said signs shall be as shown or noted on the Contract Drawings or elsewhere herein, or if not specified, they shall be adequate for the regulation, safety and convenience of traffic and in conformance with the applicable requirements of the State/Federal Manual on Uniform Traffic Control Devices.

2.02 BARRICADES

- A. Suitably lighted barriers or barricades shall be furnished by the Contractor and put up and maintained at all times during the night or daytime, around all open ditches, trenches, excavation, or other work potentially dangerous to traffic.
 - 1. Such barricades shall be as shown on the Contract Drawings, or if not shown, shall be constructed of 2 inch by 8 inch rough lumber, securely supported, braced and at least 3 feet high above the ground.
 - 2. Barricades shall be placed on all sides and throughout the entire length and breadth of all open ditches, trenches, excavations, or other work which must be barred to the general public.
 - 3. Barricades shall be properly painted to the satisfaction of the Local Regulatory Agency in order to retain a high degree of visibility to vehicular and pedestrian traffic.

2.03 FLASHERS

- A. The Contractor shall furnish and securely fasten flashing units to signs, barricades, and other objects in such numbers and for such lengths of time as are required for the maintenance and protection of traffic.
 - 1. The flashers shall be in operation during all hours between sunset and sunrise, and during periods of low visibility.
 - 2. Suitably lighted barricades shall be defined as barricades lit by flashers in accordance with this Section or other lighting methods approved by the Local Regulatory Agency in lieu thereof.
 - 3. Flashers shall be placed along the entire length of the barricades at an interval no greater than 8 feet, center to center. Flashers shall be power operated, lens directed, enclosed light units which shall provide intermittent light from 70 to 120 flashers per minute, with the period of light emittance occurring not less than 25 percent of each on-off cycle, regardless of temperature.
 - 4. The emitted light shall be yellow in color and the area of light on at least one face of the unit shall be not less than 12 square inches. The discernible light shall be bright enough to be conspicuously visible during the hours of darkness at a minimum distance of 800 feet from the unit under normal atmospheric conditions.
 - 5. For units which beam light in one or more directions, the foregoing specifications shall apply 10 degrees or more to the side and 5 degrees or more above and below the photometric axis.

2.04 PORTABLE CHANGEABLE MESSAGE SIGNS

- A. Contractor shall provide two trailer mounted portable changeable message signs to be used for the duration of construction. Message signs shall be Model No. PCMS-548 by VER-MAC, or approved equal. Message signs shall be provided with the following options:
 - 1. Modem with GPS
 - 2. Battery Charger

3. Tongue Wheel Jack
4. Manual List Mechanism

2.04 TEMPORARY BRIDGING

- A. The Contractor shall include in his bid, bridging for trenches at all street and driveway crossings in such manner as the Local Regulatory Agency may direct for the accommodation and safety of the traveling public, to provide facilities for access to private driveways for vehicular use, and to prevent blocking of intersecting traffic.
 1. He shall erect suitable barriers around the excavation to prevent accidents to the public and shall place and maintain, during the night, sufficient lights on or near the work.
 2. A space of 20 feet must be left so that free access may be had at all times to fire hydrants and proper precautions shall be taken so that the entrances to fire hydrants and fire stations shall not be blocked or obstructed.

2.05 DETOURS

- A. Temporary detours shall be constructed on the site as proposed by the Contractor and approved by the Applicable State and/or Local Authorities required by the Contract Drawings or specified elsewhere herein.
 1. Detours shall not have grades in excess of 10% anywhere along their lanes unless otherwise shown on the Contract Drawings. Detours shall be smooth riding.
 2. Suitable barricades shall be installed continuously along both sides of a detour where:
 - a. The adjacent side slope is steeper than 1 on 6 inches.
 - b. The Contractor's operations or equipment may operate within 20 feet of the detour.
 - c. Other unsafe conditions requiring them for the protection of traffic along the line of detour.

2.06 MISCELLANEOUS

- A. The Contractor may be required to employ traffic persons and take other such reasonable means or precautions as the Local Regulatory Agency may direct, or as may be needed to prevent damage or injury to persons, vehicles, or other property and to minimize the inconveniences and danger to the public by his construction operations.

PART 3 EXECUTION

3.01 CONTROL OF TRAFFIC

- A. It shall be the sole responsibility of the Contractor to keep the Local Regulatory Agencies (including but not limited to the Police and Fire Departments) pre-warned at least 72 hours in advance of changes in traffic patterns due to reduction of pavement widths or closing of streets.
- B. The Contractor shall supply, install, maintain, adjust, move, relocate, and store all signs, suitably lighted barricades, traffic cones, and traffic delineators, as necessary to carry out the traffic routing plan and maintain vehicular and pedestrian traffic.
 1. All of this work shall meet with the requirements of the Local Regulatory Agencies.
 2. The Contractor shall maintain, relocate and operate barricades and flashers throughout the life of this Contract.
- C. Should the Contractor or his employees neglect to set out and maintain barricades or lights, as required in these Specifications, the Owner immediately, and without notice, may furnish, install, and maintain barricades or lights.
 1. The cost thereof shall be borne by the Contractor and may be deducted from any amount due or to become due to the Contractor under this Contract.

3.02 ACCESS TO PROPERTY AND UTILITIES

- A. The Contractor shall arrange his operations to provide access to properties along the street including temporary bridges to driveways, and provide access to fire hydrants, manholes, gate boxes, or other utilities.
 1. Whenever any trench obstructs traffic in or to any public street, private driveway, or property entrance, the Contractor shall take such steps as required to maintain necessary traffic and access including temporary bridging if required.

2. The Contractor shall confine his occupancy of public or traveled ways to the smallest space compatible with the efficient and safe performance of the work contemplated by the Contract.
 3. If the Contractor's operations or occupancy of any public street or highway, or the uneven surfaces over any trenches being maintained by the Contractor, interfere with the removal or sanding of snow or ice by the public authorities or adjoining land owners, in an ordinary manner with regular highway equipment, the Contractor shall be required to perform such services for the public authorities or adjoining owners without charge.
 4. If the Contractor fails to do so, he shall reimburse the said authorities or adjoining owners or the Owner for any additional cost to them for doing such work occasioned by conditions arising from the Contractor's operations, occupancy, or trench surfaces, together with any damage to the equipment of said parties by those conditions or claims of any parties for damage or injury or loss by reason of failure to remove snow or ice or to sand icy spots under these conditions.
 5. The Contractor shall observe and obey all local and state laws, ordinances, regulations, and permits in relation to the obstruction of streets and highways, keeping passageways open and protecting traffic where there may be danger from blasting or other construction activities.
- B. The Contractor shall be held responsible for any damages that the Engineer, Owner, Governmental units, or their heirs or assigns may have to pay as a consequence of the Contractor's failure to protect the public from injury, and the same may be deducted from any payments that are due or may become due to the Contractor under this Contract.

END OF SECTION

SECTION 01572

UNIFORMED POLICE OFFICERS

PART 1 GENERAL

1.01 DESCRIPTION

The work under this section shall consist of providing services of uniformed traffic persons/traffic directors at such locations and for such periods as may be necessary for safety or as ordered by applicable Local Regulatory Agencies and/or Chief of Police for the control and direction of vehicular traffic and pedestrians.

No overtime for traffic persons will be allowed unless emergency conditions exist. If the Contractor elects to work more than eight (8) hours in any one day, or more than forty (40) hours in one week, he shall assume all such costs and will not be reimbursed under any bid item. However, if emergency overtime is approved by the Owner or the Engineer, payment will be made by the Owner and based on the hourly rate billed by the Police Department.

Prior to the start of construction, the Contractor shall contact the Police Department to familiarize himself and adhere to their respective scheduling requirements. When ordering, canceling, and/or communicating with the Police Services personnel, the Contractor shall identify

1. The location of the project,
2. The Contractor Number (to ensure proper billing procedures for accounting and routing purposes), and
3. The work as a City funded contract (to ensure surcharges are not applied).

In the event these criteria are not clearly stated, the Contractor shall be held responsible for any excess charges associated with this program.

The Contractor is advised that payment of Police officers shall be performed by the Contractor and reimbursed under Bid Item No. 29. The Contractor shall be completely responsible for ordering and for canceling details on a day to day basis. In the event the Contractor has ordered police details and does not give the police department ample advance notice that work has been cancelled for that day due to inclement weather or for any other reason, then the Contractor shall bear the expense of that billed detail. To that end, the Contractor shall completely familiarize himself with the current policies regarding and/or regulating police details. In the event police detail requests cannot be completely filled to cover the Contractor's scheduled work for any particular day then the Contractor shall adjust his work schedule accordingly and shall not hold the City responsible for any loss of time or for any other financial loss. However, the City of Newton will grant an extension of time to the original contract term for each day lost due to insufficient police staffing.

1.02 RELATED WORK SPECIFIED ELSEWHERE

SECTION 01020 - ALLOWANCES
SECTION 01025 - MEASUREMENT AND PAYMENT
SECTION 01570 - TRAFFIC REGULATION

PART 2 MATERIALS

2.01 Local police/constables are the only acceptable traffic persons/traffic directors.

2.02 The local police/constables shall be uniformed including headgear, and equipped so as to be readily distinguishable as a traffic person/traffic director.

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01610
PRODUCT HANDLING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

1.02 QUALITY ASSURANCE

- A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.03 MANUFACTURER'S RECOMMENDATIONS

- A. Comply with manufacturers' recommendations on product handling, storage and protection.

1.04 PACKAGING

- A. Deliver products to the job site in their manufacturer's original container(s), with labels intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.
- B. The Engineer may reject as non-complying such material and products that do not bear identification satisfactory to the Engineer as to manufacturer, grade, quality and other pertinent information.

1.05 PROTECTION

- A. Mechanical equipment subject to damage by the atmosphere if stored outdoors, shall be stored in a building with a controlled environment. The building may be a temporary structure on the site or a building off the site.
- B. PVC pipe shall be covered to protect it from UV degradation.

1.06 REPAIRS AND REPLACEMENTS

- A. In event of damage, promptly make replacements and repairs to the approval of the Engineer at no additional cost to the Owner.
- B. Additional time required to secure replacements and to make repairs will not be considered by the Engineer to justify an extension in the Contract Time of Completion.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work of this Section consists of procedures and requirements for contract closeout, such as cleaning, restoration of project site to original condition, inspections, and guarantees.

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION

3.01 CLEANING UP

- A. During its progress, the work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
- B. Where material or debris has washed or flowed into or been placed in water-courses, ditches, gutters, drains, catch basins, or elsewhere as a result of the Contractor's operations, such material or debris shall be entirely removed and legally disposed of during progress of the work, and the ditches, channels, drains, etc., kept in a neat, clean and functioning condition.
- C. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operation in a neat and satisfactory condition.
- D. Unless otherwise specifically directed or permitted in writing, the Contractor shall perform the following tasks:
 - 1. Tear down and remove all temporary buildings and structures built by him.
 - 2. Remove all temporary works, tools, and machinery or other construction equipment furnished by him.
 - 3. Remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him.
 - a. Subsequent to disinfection, remove or suitably neutralize disinfectant residuals from treated area(s).
 - 4. Remove all rubbish from any grounds which he has occupied.
 - 5. Leave roads and all parts of premises and adjacent property affected by his operations in a neat and satisfactory condition.

3.02 RESTORATION

- A. The Contractor shall restore or replace, when and as directed by the Engineer, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations.
 - 1. To this end, the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work.
 - 2. Suitable materials, equipment, and methods shall be used for such restoration, or as required in other divisions of this Specification.
- B. In restoring the disturbed areas the Contractor shall:
 - 1. Replace to an equivalent depth any loam that has been removed during the excavation.
 - 2. Remove from the property and legally dispose of in an approved fashion all trees, brush, and other items that the Contractor has cut in order to prosecute his work.
 - 3. Remove from the property upon completion of the work thereon, all excess materials of construction such as stone, pipe, concrete block, gravel, etc., that the Contractor may have stockpiled for use during the course of the work.

4. Leave the land in a smooth, even condition. All ruts, holes or other undesirable grading conditions which resulted from work under this Contract shall be filled and the area so graded to eliminate ponding.
5. All drainage course(s) shall be restored to their pre-existing condition or better.
6. Reset all public or private monuments, iron pipes or other types of property line and geodetic markers damaged or disturbed by operations under this Contract. This work shall be done by a licensed land surveyor at no additional cost.
7. Repair, reset or replace as directed all pipes, walls, utilities, fences, railings, stone walls, etc., and ornamental or utilitarian domestic accessories, such as, but not limited to, arbors, fireplaces, sheds and incinerators, or other surfaces, structures, or property which may have been damaged, either directly or indirectly by his operations under this Contract.
8. Restore to a condition at least equal to that in which they were found immediately prior to the beginning of construction all sidewalks, gutters, driveways and curbs which have been damaged by the Contractor's operations.

3.03 FINAL INSPECTION

- A. At completion of all work, the Owner and Engineer, along with the General Contractor and each of the subcontractors shall conduct a final inspection jointly for "punch list" purposes and to determine the exact status of the project before final acceptance.

3.04 GUARANTEES

- A. The Contractor shall take notice of special guarantees required in the technical Sections of these Specifications.
 1. If, in the opinion of the Owner, any item requires excessive maintenance during guarantee periods, the item shall be considered defective and the Contractor shall correct the defects.
 2. All defects so corrected shall be at the expense of the Contractor.

END OF SECTION

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SECTION 02015

TEST PITS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide test pits where noted/shown on the Drawings or at locations requested by the Engineer.
 - 1. In general the work under this Section shall consist of the excavation of test pits or other miscellaneous excavations not specified for payment elsewhere, by the Contractor where it may be necessary to locate or examine soils, groundwater, drains, pipes, rock, public utilities, subsurface structures, or any other possible obstacle or condition.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02222 Earthwork for Water Distribution Systems

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 COORDINATION WITH UTILITY OWNERS

- A. The Contractor shall coordinate the excavation of all test pits with the respective utility owners having facilities in the vicinity of the location of test pits.
 - 1. All utilities shall be informed of the necessity of work under this Section and the Contractor shall give sufficient notice to the respective utility owners to afford reasonable time for coordination.
 - 2. If so desired by respective utility owners, all or part of the work under this Section may be accomplished by their crews and/or supervised by them.

3.02 EXCAVATION

- A. Unless otherwise specified, the Contractor shall dig test pits as required by the Contract Documents, and the Contractor shall notify the Engineer of the results immediately and prior to the start of any underground installations within said test pit areas.
 - 1. The Owner/Utility Companies shall be notified well in advance of excavation so that they also may make the necessary measurements to locate all objects within test pits.
 - 2. Excavation of test pits shall be accomplished by such means as are required to ensure that any underground utilities or structures that may be encountered are not damaged
 - 3. It shall be the Contractor's responsibility for any damages incurred during the excavation operations. Any such damages shall be repaired by him (if permitted) to the satisfaction of the Responsible Agency at the Contractor's own expense. Where the repair and/or replacement must be done by the Responsible Agency, any and all costs thereof shall be borne by the Contractor.
 - 4. The Contractor shall notify the Engineer and/or utility companies of any conflicts uncovered which may require design revisions, relocations, and/or adjustment.
 - 5. No work shall be started within these areas of conflict until so authorized by the Engineer.
 - 6. Test pit excavation and backfill shall comply with the applicable provisions of Section 02222.
 - 7. Hand excavation shall be performed where necessary to prevent damage to the existing utilities.

3.03 MEASUREMENT

- A. The Contractor shall measure and record the size, configuration, horizontal, and vertical location of all utilities, pipes or other obstacles uncovered in the various test pits dug under this Section.
 - 1. Size of test pits shall be as directed by the Engineer.

3.04 RESTORATION

- A. Where an existing pavement has been removed for the test pit excavation, the surface shall be restored to grade. The top 12 inches shall be compacted gravel.
 - 1. In all other areas, the surface of test pit areas shall be restored to a condition equal to or better than original.

END OF SECTION

SECTION 02140

SITE DRAINAGE AND DEWATERING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide drainage and dewatering as required by the Contract Documents.
 - 1. In general, the Contractor shall furnish all materials, equipment, labor, and incidentals necessary to provide dewatering and drainage control during construction.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02222 Earthwork for Water Distribution Systems
 - 2. Section 02611 Ductile Iron Pipe and Fittings

1.03 SUBMITTALS

- A. None required.

PART 2 PRODUCTS

2.01 EROSION AND SEDIMENTATION CONTROL

- A. Devices for erosion and sedimentation control for effluent of dewatering operations shall be as specified in Section 01567, Environmental Protection.

PART 3 EXECUTION

3.01 INSTALLATION

- A. To insure proper conditions at all times during construction the Contractor shall provide and maintain ample means and devices with which to remove and dispose of all water entering trenches and other excavations.
 - 1. Means of water removal and disposal shall include but not be limited to wells, surface pumps, and/or well point systems, to the extent required to prevent "boils" or softening of the foundation soils.
 - 2. The Contractor shall pitch the ground around the excavation to prevent water from running into excavated areas and to prevent damage to other structures or work on adjacent property.
 - 3. The Contractor shall remove immediately any surface or seepage water or water from sewers, drains, creeks, or other sources, which may accumulate during the excavation and construction work.
- B. Excavations shall be kept dry until the structures, pipes and appurtenances, to be built or installed therein, have been completed and backfilled to such extent that they shall not float or otherwise be damaged by water in the excavation.
 - 1. In no event shall water rise to cause unbalanced pressure on the pipe or other structures. The Contractor shall prevent flotation of the pipe or structures.
 - 2. Pipe, masonry and concrete shall not be placed in water. Water shall not submerge new masonry or concrete within four (4) hours after placement.
- C. Sufficient stand-by pumping equipment shall be installed and mounted for immediate use in case of emergencies. The Contractor shall be responsible for the adequacy of their dewatering equipment and system in controlling the water and for protection to adjacent public and private property from damage. Any damage to permanent work or existing property resulting from the failure of the Contractor to provide an adequate dewatering system shall be repaired by the Contractor at their expense.
 - 1. Wells, well points and pump sumps shall be installed with adequate filters to prevent loss of fine grained soils.

3.02 DISPOSAL OF DRAINAGE WATER

- A. All water pumped or drained from the work shall be disposed of in such a manner as to not cause injury to public health, damage to public or private property, interference with other work or adverse impacts to adjacent wetlands.
 - 1. Effluent from dewatering operations shall not be discharged directly to wetlands or waterways and shall not be discharged to storm drain systems prior to being filtered through a siltation basin.
 - 2. Discharge shall be such that no erosion occurs. Erosion protection shall be as specified in Section 01567, Environmental Protection.

END OF SECTION

SECTION 02160

SUPPORT OF EXCAVATION

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide excavation support as required by the Contract Documents.
 - 1. In general, this work shall consist of furnishing and placing timber and/or steel sheeting and shoring of the types and dimensions required for proper excavation support.

1.02 DEFINITIONS

- A. Shoring shall mean the use of a steel trench box, steel sheeting, or timber sheeting braced as required.
- B. Timber sheeting shall mean the use of tongue and groove wood sheeting or steel soldier beams with wood lagging braced as required.
- C. Steel sheeting shall mean the use of steel sheet pilings with interlocking joints, braced by steel members as required.

1.03 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02222 Earthwork for Water Distribution Systems
 - 3. Section 02611 Ductile Iron Pipe and Fittings
- B. As established in the General Conditions of the Contract, the Contractor is solely responsible for means and methods of construction and for the sequence and procedures to be used.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - 1. The Contractor shall not perform excavations in unstable ground and shall employ a positive means of containing the unstable ground behind shoring, before excavation may proceed.
- B. Employ a qualified Engineer, properly permitted to provide such services at the location of the work, to design the shoring system and to inspect and report on the quality of its construction.
- C. Comply with all pertinent requirements of governmental agencies having jurisdiction.

1.05 STANDARDS

- A. The following Standards form a part of this Specification as referenced:
 - 1. ASTM A328, Specification for Steel Sheet Piling
 - 2. Massachusetts DPW Standard Specifications, Section 950 Sheeting.
 - 3. Code of Federal Regulations (CFR), 29 CFR 1926, OSHA Standards - Excavation.

1.06 SUBMITTALS

- A. Submit shoring design to Engineer for record purposes only.

PART 2 PRODUCTS

2.01 DESIGN

- A. Design a shoring system which will safely and adequately prevent collapse of adjacent materials and which will permit construction of the Work to the arrangement shown on the Drawings.
- B. All shoring systems shall be designed so as to support all vertical and lateral loads and other surcharge loads imposed on the system during construction, including earth pressures, utility loads and other surcharged loads in order to provide safe and expeditious construction of the permanent structures and prevent movement and/or damage to adjacent soil, buildings, structures and utilities.
- C. Secure all needed approvals, including those of governmental agencies having jurisdiction and of adjacent property owners if required, at no additional cost to the Owner.

2.02 MATERIALS

- A. Material shall include, but not necessarily be limited to sheet piling, soldier piles, lagging, bracing members such as wales, struts, shores and tieback anchors.
- B. Lumber for timber sheeting and shoring:
 - 1. Shall be sound Spruce, Douglas Fir, white or yellow Lodgepole, Ponderosa pine, or western hemlock plank, planed on one side and either tongue and grooved or splined.
- C. Steel sheeting:
 - 1. Shall be of approved section and quality, either new or secondhand, conforming to the requirements of ASTM A328.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Construct and install the shoring system in strict accordance with the design engineer's requirements.
 - 1. When using soldier piles and lagging, where boulders or cobbles are encountered, soldier piles shall be installed in pre-augered holes over the full depth as required to prevent misalignment and damage.
 - 2. Vibration monitoring during installation and extraction of braced excavation shall be provided wherever the excavation is within 100 feet of existing structures.

3.03 SHEETING LEFT IN PLACE

- A. Sheeting left in place, for the purpose of preventing injury to structures, utilities or other property, shall be cut-off 3 feet below finished grade.
 - 1. The right of the Engineer to order sheeting left in place shall not be construed as creating any obligation on his part to issue such orders. His failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise growing out of a failure, on the part of the Contractor, to leave in place sufficient sheeting to prevent movement of the ground.

3.04 SHEETING REMOVED

- A. All sheeting not left in place shall be carefully removed in such manner as to not endanger the construction or other structures, utilities, or property.
 - 1. All voids left or caused by withdrawal shall be immediately refilled with approved material, and compacted with tools especially adapted to that purpose.

2. Vibratory extraction methods shall be used only when it can be demonstrated that settling of pipe and structures will not occur. If such settling occurs, it shall be corrected at the Contractor's expense.

3.05 TRENCH BOX OR SHIELD

- A. Use of a trench box or shield shall not relieve the Contractor of any liability for damages to persons or property growing out of a failure of the Contractor to leave in place sufficient sheeting and bracing to prevent the caving or moving of the ground or disturbance of the completed work.
 1. Care shall be taken, when a trench box or shield is moved ahead, so as not to pull apart the joints of pipe already placed or leave voids around the pipe wall.
 2. At no time shall the portable box or shield be allowed to be positioned below the spring line of the pipe.
 3. The width of the trench box or shield shall be such that a minimum 6-inch horizontal clearance is maintained between the pipe and shield at all times
 4. If the pipe has moved, it shall be reset to the proper line and grade.
 5. Any voids between the trench box or shield and the undisturbed trenchwall within the pipe zone (bottom of trench to top of cover material) shall be filled with crushed stone, bank run gravel, or approved material, immediately after the box or shield is positioned.

END OF SECTION

SECTION 02222

EARTHWORK FOR WATER DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Provide all earthwork as required by the Contract Documents.
- B. In general the work of this Section shall include but not necessarily be limited to, excavation, trenching, filling, backfilling, compaction and grading for water distribution systems.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 01013 Facility Interference with Proposed Work
 - 2. Section 01300 Submittals
 - 3. Section 01570 Traffic Regulation
 - 4. Section 02140 Site Drainage and Dewatering
 - 5. Section 02160 Support of Excavation
 - 6. Section 02227 Rock Removal
 - 7. Section 02611 Ductile Iron Pipe and Fittings
 - 8. Section 02640 Buried Valves and Appurtenances
 - 9. Section 02930 Loam and Seed

1.03 SITE INVESTIGATION

- A. The grades and other site information have been compiled by field surveys.
 - 1. The Contractor acknowledges that he has satisfied himself as to the nature and location of the work.
 - 2. Failure by the Contractor to acquaint himself with all available information concerning the site will not relieve him from the responsibility, for estimating properly, the difficulty or cost of successfully performing the work.

1.04 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - 1. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

1.05 PROTECTION OF PROPERTY AND UTILITIES

- A. Extreme care shall be exercised to prevent damage to existing trees, shrubs, utilities, walls, sidewalks, fences and private property.
 - 1. Any damage to these items as a result of work performed by the Contractor shall be repaired by the Contractor at his own expense.
 - 2. Existing property boundary markers, control points and datum elevation markers or bench marks shall be preserved.
 - a. All such items which are displaced or destroyed by the Contractor shall be replaced by a registered Engineer or Land Surveyor, as required, with all expenses paid by the Contractor.
- B. Utility agencies shall be contacted and advised of proposed work prior to the start of work by the Contractor.
 - 1. Notify Dig Safe.
 - 2. Obtain information from the proper sources and authorities concerning locations of all utilities within the scope of this work.
 - 3. If and when encountered, utilities shall be supported and protected, and the Engineer shall be notified.
 - a. Ample time shall be allowed for entrance and taking such measures as may be required for the continuance of such services by the utility owner.

4. Rules and regulations governing the respective utilities shall be observed. The Contractor's responsibilities with respect to utility locations, protection, interferences and relocations shall be as further specified in Section 01013.

1.06 REFERENCE STANDARDS

- A. The Contractor shall comply with the provisions of the following agencies as they apply to this project and as referenced:
 1. Associated General Contractors of America, Inc. (AGCA) "Manual of Accident Prevention in Construction."
 2. Occupational Safety and Health Administration (OSHA), United States Department of Labor Requirements.
 3. American National Standards Institute (ANSI) "Safety Requirements for Construction and Demolition."
 4. American Water Works Association Standards.
- B. The following American Society for Testing and Materials (ASTM) standards form a part of this specification as referenced:
 1. ASTM C33 Standard Specification for Concrete Aggregates
 2. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 3. ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
 4. ASTM D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
- C. The following Massachusetts Department of Transportation (MassDOT) Standard Specifications form a part of the specification as referenced:
 1. Section M1 Soils and Borrow Materials
 2. Section M2 Aggregates and Related Materials

1.07 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Testing and Samples:
 1. Test reports on backfill materials, moisture density tests, in place density tests (ASTM D1557 and D6938).
 2. Representative backfill and bedding samples and gradation tests (ASTM D6913).
 3. Tests shall be in conformance with paragraph 3.16; compaction requirements and testing as specified herein.

1.08 TRAFFIC

- A. While excavating and backfilling is in progress, traffic shall be maintained in a manner as specified in Section 01570 Traffic Regulation.

PART 2 PRODUCTS

2.01 GENERAL

- A. Except as specified for pipe bedding, pipe cover, roadway subbase, and refill for rock and unsuitable materials, backfill materials may be as follows:
 1. Suitable materials for trench backfill shall be the material excavated during the course of construction, but excluding debris, pieces of pavement, frozen materials, organic matter, silt, top soil, ledge excavation and rocks over six inches in largest dimension.
 2. Gradation of material shall be generally as specified for gravel borrow except that maximum size of stone shall be 6 inches.
 3. The suitability of existing material for use as backfill will be determined by the Engineer.
 4. All unsuitable materials shall be disposed of as per paragraph 3.18.A.

2.02 PIPE BEDDING AND COVER MATERIAL

A. Ductile Iron Pipe:

1. Gravel borrow shall be a granular material, well graded from fine to coarse, with gradation as specified in paragraph 2.05 of this specification section, obtained from approved natural deposits and unprocessed except for the removal of unacceptable material and stones larger than the maximum size permitted.
2. It shall not contain vegetation, masses of roots, or individual roots.
3. It shall be free from loam and other organic matter, clay, and other fine or harmful substances.
4. Gravel borrow shall conform to requirements as specified in paragraph 2.05 herein.

B. Plastic Pipe or Copper Tubing:

1. Sand borrow shall consist of clean inert, hard, durable grains of quartz or other hard durable rock free from loam or clay, surface coatings and deleterious materials.
2. Sand borrow shall conform to requirements as specified in paragraph 2.08 herein.

2.03 CONCRETE SAND

- A. Concrete sand shall meet ASTM C33 for fine aggregate.

2.04 STRUCTURAL FILL

- A. Structural fill shall generally range from gravelly sand to gravel, free of organic material, trash, loam, ice, snow, frozen soil, and other objectionable material, and shall conform to the following:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
6 inch	100
No. 4	30-80
No. 40	5-35
No. 200	0-8

2.05 GRAVEL BORROW

- A. Gravel borrow shall be a granular material, well graded from fine to coarse, with a maximum size of 3 inches, obtained from approved natural deposits and unprocessed except for the removal of unacceptable material and stones larger than the maximum size permitted.

1. It shall not contain vegetation, masses of roots, or individual roots.
2. It shall be substantially free from loam and other organic matter, clay, and other fine or harmful substances.
3. Gravel borrow shall have the following gradation:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3 inch	95-100
1/2 inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-8

2.06 PROCESSED GRAVEL FOR ROADWAY BASE

- A. Shall meet the requirements of the Commonwealth of Massachusetts Department of Public Works Standard Specifications for Highways and Bridges, latest edition, M1.03.1.

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3 inch	100
1 1/2 inch	70-100
1/4 inch	50-85
No. 4	30-60
No. 200	0-10

2.07 CRUSHED STONE (Hydrant Drains)

- A. Crushed Stone: Shall consist of durable crushed stone or durable crushed gravel stone, washed, free from ice and snow, stone dust, sand, clay, loam, or other deleterious material. The crushed stone shall be uniformly blended and conform to the following:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
5/8 inch	100
1/2 inch	85-100
3/8 inch	15-45
No. 4	0-15
No. 8	0-5

2.08 SAND BORROW

- A. Sand borrow shall consist of clean inert, hard, durable grains of quartz or other hard durable rock free from loam or clay, surface coatings and deleterious materials, primarily of particles with 100 percent passing the one inch sieve and shall be well graded within the following limits:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
1/2-inch	90-100
1/4-inch	25-60
No. 40	5-25
No. 200	0-5

2.09 EXCAVATABLE CONTROLLED DENSITY FILL (CDF)

- A. Shall be Type 1E, Flowable batched at a concrete plant and meeting the following specifications:

- | | | |
|----|---------------------------|--|
| 1. | Portland Cement | Meeting AASHTO M85 |
| 2. | Fly Ash | Meeting AASHTO M4.05.02 |
| 3. | Sand | Meeting M4.02.02 |
| 4. | Water | Meeting M4.02.04 |
| 5. | Air Entraining Admixtures | Meeting M4.02.05 |
| 6. | Compressive Strength | 28 day = 30-80 psi
90 day = 100 psi |
| 7. | Slump | 10-12 inches |

2.10 DENSE GRADED CRUSHED STONE

- A. Dense graded crushed stone shall consist of crusher-run coarse aggregates of crushed stone or gravel and fine aggregates of natural sand or stone screenings uniformly premixed.

- Coarse aggregate shall consist of hard, durable particles of fragments of stone. The percentage of wear by the Los Angeles test shall not be more than 45.
- Fine aggregate shall consist of natural or crushed sand.

- B. Dense graded crushed stone shall meet the requirements of the Commonwealth of Massachusetts Department of Public Works Standard Specifications for Highways and Bridges, latest edition, M2.01.7.

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
2 inch	100
1 1/2 inch	70-100
3/4 inch	50-85
No. 4	30-55
No. 50	8-24
No. 200	3-10

PART 3 EXECUTION

3.01 TRENCH EXCAVATION

- A. The Contractor shall make all excavation in earth and in rock, necessary or incidental to the proposed construction under the terms of this Contract and as herein specified or indicated on the Drawings.
 - 1. All trench excavation shall be accomplished by open cut method.
 - 2. All excavation shall be made in such manner and to such widths as will give ample room for properly installing, constructing and inspecting pipe lines and structures they are to contain.
 - 3. The width of trenches shall be sufficient to allow thorough compacting of the refill adjacent to the lower quarters of the pipe. At pipe joints such additional width and depth shall be excavated as is necessary to give ample room for properly making and inspecting the pipe joint.
 - 4. Bracing and support of all trench excavation shall meet all requirements of Local and State ordinances and OSHA regulations.
 - a. Sheeting and bracing, or the use of a steel support box shall be used where required to maintain a safe working condition and provide protection from collapse of the trench walls.
 - 5. During excavations, material determined by the Engineer to be suitable for backfilling, shall be placed a sufficient distance from the banks of the trench to avoid slides or cave-ins. Unsuitable material shall be disposed of as specified in paragraph 3.18 and replaced with surplus suitable material and gravel borrow to the extent necessary.
 - 6. Should conditions make it impractical or unsafe to place material along the trench, it shall be hauled and stored at a location provided by the Contractor. When required, it shall be re-handled and used in backfilling the trench. No additional compensation will be made for re-handling this material.
 - 7. Pipe trenches shall be backfilled as soon as practical after the pipes have been laid, jointed and inspected by the Engineer. The extent of excavation open at any one time shall be no more than 50 linear feet of trench during working hours and no more than 20 linear feet during non-working hours.

3.02 EXCAVATION CLASSIFICATION

- A. Earth excavation shall comprise all materials not classified as rock excavation and shall include clay, silt, sand, muck, gravel, hardpan, loose shale, pavement, pavement bases, loose stone in masses and boulders measuring less than one cubic yard in volume.
- B. Rock: See Section 02227 Rock Removal.

3.03 TRENCH EXCAVATION IN PAVED ROADWAYS

- A. In excavating trenches in roadways having an improved pavement, the Contractor shall cut the pavement twice; once prior to excavation and again prior to permanent resurfacing.
 - 1. The first cut may be made using a water cooled abrasive saw, pneumatic chisel or a wheel cutter attached to a front end loader.
 - 2. The second and final cut shall be made with a water cooled abrasive saw.
 - 3. In all cases a trial section shall be cut to indicate the performance of the equipment to be used.
 - 4. Pavement removed shall not be mixed with other excavated materials, but shall be disposed of away from the site of the work before the remainder of the excavation is made.
 - 5. Existing pavement and base course to remain shall be protected by the Contractor. All existing pavements and base courses which are to remain and have been damaged, shall be restored or replaced by Contractor to match existing pavements, base courses and grades, at no additional expense to the Owner.

3.04 UNSUITABLE MATERIAL

- A. All pipes and structures are to be laid on a stable foundation. If material at grade is determined to be unsuitable by the Engineer, the Contractor shall excavate a further depth and/or width, and refill with an approved material. Refill material shall be structural fill, gravel borrow or crushed stone as determined by the Engineer.
 - 1. Where fine sand and silt are encountered at the bottom of the trench, it shall be the option of the Engineer to require a 6-inch compacted depth of concrete sand meeting ASTM C33 for fine aggregate to be installed beneath the pipe bedding to the full width of trench.
 - 2. Payment width limits shall be the same as specified for trench excavation, unless an additional width of trench is ordered by the Engineer.
 - 3. Any excavation in excess of the amount ordered by the Engineer shall be backfilled and compacted with an approved granular material, at the Contractor's expense.

3.05 ROCK REMOVAL

- A. See Specification Section 02227.

3.06 DEWATERING

- A. See Specification Section 02140.

3.07 BACKFILLING AND COMPACTING

- A. Backfill shall be placed in uniform layers. Each layer shall be thoroughly compacted by tamping or vibrating with mechanical compacting equipment.
 - 1. Care shall be taken to compact the backfill materials throughout the full width of the excavation and beneath all pipes and structures.
 - 2. The backfilling of trenches shall proceed as soon as the laying of the pipe (s) or installation of the structures will allow.
 - 3. Pipe bedding shall be required below and up to the springline of all pipe.
 - a. Pipe bedding shall be placed to the full width of the trench and to a depth of 6 inches below the bottom of the pipe barrel as indicated on the Drawings.
 - 4. Pipe bedding shall be placed 12 inches beyond the widths of a utility structure foundation (base) and to a depth of 6 inches below the foundation (base) or as indicated on the Drawings.
 - 5. After a pipe has been placed and bedded, the trench shall be filled to the centerline of the pipe with pipe bedding and compacted.
 - a. Material under and around the pipe shall be carefully and thoroughly compacted and tamped with approved compacting equipment.
 - 6. From the centerline of the pipe to a point 12 inches above the top of the pipe, the fill shall be pipe bedding.
- B. Placement of Backfill Above the Pipe Bedding
 - 1. Above the pipe bedding, backfill shall be suitable material from the excavation or, if ordered by the Engineer, gravel borrow.
 - a. This backfill shall be placed in layers 12 inches deep in loose measure, and each layer shall be thoroughly compacted.
 - b. This backfill shall be placed up to the bottom of materials specified to be placed for surfacing requirements.
- C. Roadway Trench
 - 1. The following additions shall apply specifically to trenches within roadways:
 - a. The top twelve (12) inches of trench refill, roadway sub-base, shall be comprised of processed gravel furnished, placed, graded and compacted by the Contractor. This material shall be placed during the backfilling operation.
 - b. The Contractor shall fine grade the surface, apply dust control treatment and maintain the surface in a condition which will allow safe vehicular traffic until resurfacing is placed.
 - 2. The length of unsurfaced trench shall not exceed 500 linear feet, and shall be maintained to the Owner's satisfaction, in a condition to allow safe vehicular traffic.
 - a. If the trench is not maintained in a satisfactory condition, the allowable length of unsurfaced trench shall be reduced accordingly.

3.08 TRENCH SIZE

- A. Trenches shall be excavated to the necessary width and depth for proper laying of pipe and placement of concrete and other materials and shall have vertical sides to 12 inches above the pipe.
 - 1. Widths of trenches shall be as shown on the drawings.
 - 2. The depth of trench shall be a minimum 6 inches below the pipe barrel, or as shown on the Drawings.

3.09 STRIPPING TOPSOIL

- A. Topsoil shall be carefully stripped and separately stored to be used again for topsoiling and seeding on off-pavement areas within which excavations are to be made.

3.10 EXCAVATION NEAR EXISTING STRUCTURES AND UTILITIES

- A. It is called to the attention of the Contractor that there are utilities and other underground pipes along the course of the work. Information shown on the Drawings as to the location of said utilities and pipes is from the best available sources, but no guarantee is implied, nor is it to be assumed that such information is accurate or complete. Utility lines shall be crossed in the course of the work.
- B. The Contractor shall exercise special care during his operations to avoid injury to all such underground utilities and structures.
 - 1. When necessary, the Contractor shall cooperate with, and consult with representatives of the Owner and the utility companies in order to avoid damage to the utilities.
 - 2. The Contractor shall arrange for or furnish and erect suitable supports and shoring or other means of protection where required to protect the utilities, all at no additional cost to the Owner.
 - 3. Hand methods of excavating shall be used around buried utilities and is included in the work to be done under this Contract, at no additional cost to the Owner.
 - 4. Interference between the proposed work and existing utilities, relocation of existing utilities, repair or damage to existing utilities, and protection and support of existing utilities during construction of the proposed work will be as specified in Section 01013.

3.11 EXCAVATION WITHIN BORDERING VEGETATED WETLAND (BVW)

- A. All excavation within the BVW shall comply with the following:
 - 1. Erosion control barrier shall be in place.
 - 2. Heavy duty tarpaulins shall be laid alongside the work area, within the upland adjacent to the proposed wetland work area, for the temporary storage of soil.
 - a. The tarpaulins shall be placed within the upland, near the point where the work enters the wetland to allow the temporary storage of soils.
 - 3. During soil excavation within the wetland, organically enriched topsoil shall be excavated first and segregated on the tarpaulin noted above.
 - 4. To the extent possible, plant material will be allowed to remain in the topsoil. This includes herbaceous vegetation (e.g. ferns) shrubs and saplings. Other soils shall be placed on the tarp and kept apart from the topsoil.
 - 5. Subsoils excavated from below the topsoil layer from the next pipe section shall be utilized as backfill over the pipe and bedding for the previously laid pipe.
 - a. Use of native subsoils for backfill will help to restore original patterns of groundwater movement.
 - 6. Topsoil from the next pipe section, with as much plant material as possible being allowed to remain, shall be carefully cut out in sod-like sections, and placed over the backfilled prior pipe sections.
 - 7. The above steps are to be repeated as necessary for the entire length of the wetland crossing.
 - 8. All restored areas shall be immediately seeded with an herbaceous seed mix.

3.12 PROTECTION OF PROPERTY

- A. The Contractor shall, at his own expense, preserve and protect from injury all property either public or private along and adjacent to the line of work, and be responsible for and repair any and all damage and injury thereto, arising out of or in consequence of any act or omission of the Contractor.
 - 1. All existing pipes, culverts, poles, wires, fences, mailboxes, stone walls, curbs, bounds, etc., shall be temporarily removed, supported in place or otherwise protected from injury, and shall be restored to at least as good condition as that in which they were found immediately prior to the start of work.
 - 2. Lawns, shrubs, bushes, planting beds and decorative trees disturbed or damaged shall be restored to a condition equal to that found prior to the start of construction, either by temporary transplant or replacement in kind, except as otherwise indicated on the Drawings.

3.13 SAFETY AND ACCOMMODATION

- A. The Contractor shall provide, at his own expense, suitable bridges over trenches where required for the accommodation and safety of the traveling public, and provide facilities for access to private driveways for vehicular use.
 - 1. He shall erect suitable barriers around the excavation to prevent accidents to the public and shall place and maintain during the night, sufficient lights on or near the work.

2. A space of twenty (20) feet shall be left so that free access may be had at all times to fire hydrants and proper precautions shall be taken so that the entrances to fire hydrants and fire stations shall not be blocked or obstructed.

3.14 DETOURS

- A. It is the intent of this Contract to keep the roadways open to two way traffic at all times. In order to obtain permission for the closing of the roadway, the Contractor shall satisfy the Owner, Police Chief and Fire Chief, that his operations will allow emergency access at all times.
 1. See Section 01570, Traffic Regulation.

3.15 UNIFORMED POLICE OFFICERS

- A. The Contractor shall make all arrangements with the local Police Chief and/or the State Police for the services of uniformed police officers.
 1. If, in the opinion of the State Police, Police Chief or the Owner, uniformed police officers are required for protection of persons and control of traffic, the Contractor shall be responsible for making all arrangements for said uniformed police officers as may be required.

3.16 COMPACTION REQUIREMENTS AND TESTING

- A. All backfill materials shall be thoroughly compacted by rolling, tamping or vibrating with approved mechanical or pneumatic compacting equipment so that pipe, structures, paving and other construction will not settle at the time of construction or in the future. The responsibility for thorough compaction is that of the Contractor irrespective of methods of backfill and depth of backfill layers placed.
- B. All percentages of compaction specified herein shall be of the maximum dry density at the optimum moisture content as established ASTM D1557 and verified by ASTM D6938. When the term "thoroughly compacted" is used in these specifications, it shall mean compaction to at least 95% of the maximum density of the soils at optimum moisture content.
- C. The following numbers and types of soil tests shall be made where directed by the Engineer. These tests shall be made by qualified personnel of an independent testing laboratory, acceptable to the Engineer and paid by the Contractor. Three copies of all test results shall be delivered to the Engineer.
 1. Particle-Size analysis of Soils and Backfill Materials in accordance with ASTM D6913. A minimum of one satisfactory test from each material in the field shall be submitted to the Owner and Engineer in addition to the initial shop drawings confirming material compliance with the specifications.
 2. Moisture-Density Relationship of soil in accordance with ASTM D1557, Method D. A minimum of one satisfactory test from each material in the field shall be submitted to the Owner and Engineer in addition to the initial shop drawings confirming material compliance with the specifications.
 3. In-Place Density Tests of materials in accordance with ASTM D6938. Compaction tests will be taken at random on compaction layers below and at finished surfaces. Compaction testing frequency shall occur as outlined below, or as directed by the Engineer.
 - a. Not less than one compaction test for every 300 linear feet.
 - b. Not less than one compaction test for every 5,000 sq. ft. for each lift.
 4. Failed tests shall be repeated at the Contractor's expense.
- D. The Owner reserves the right to have additional compaction tests performed by an independent laboratory with testing costs borne by the Owner, except that failed tests shall be repeated at the Contractor's expense.
- E. If any of the field density test results fail to meet the density as specified herein for the earthwork involved, then the Contractor shall remove all of the earthwork in that portion of the work involved as determined by the Engineer, and shall replace it in accordance with these Specifications to the required density. After the work is replaced, additional field density tests will be made by an independent testing laboratory retained by the Owner, and the Contractor shall reimburse the Owner for all costs for such additional testing.
 1. Compaction shall be to the following densities:

<u>Fill and Backfill Location</u>	<u>Modified Proctor Density (Percent)</u>
Under structures and pipes	95
Beside structure foundation walls	95
Top two feet under pavements	95
Under pavements below top two feet	95
Trenches through unpaved areas	90
In embankment	90

F. Puddling and jetting of the backfill shall not be permitted except in special cases approved by the Engineer.

3.17 TRENCH EXCAVATION IN FILL

- A. Where the existing ground surface does not permit at least 4 feet of cover over the finished pipe, and where indicated on the Drawings, the Contractor shall place and compact suitable fill material to the depth necessary to provide the 4 foot minimum cover, including loam to a minimum top width of 6 feet, or as otherwise shown on the Drawings
1. Minimum side slopes shall be two horizontal to one vertical.
 2. Fill material shall be from surplus suitable material or gravel borrow, and be clean, dry, and capable of satisfactory compaction, all as approved by the Engineer, and shall be placed in layers not exceeding 8 inches thick and compacted.
 3. The trench shall be excavated in the compacted fill and the remainder of the work shall be in accordance with other portions of these Specifications.

3.18 DISPOSAL OF SURPLUS AND UNSUITABLE EXCAVATED MATERIAL

- A. All surplus excavated material and any material unsuitable for use shall be disposed of in disposal areas provided by the Contractor.
1. It is the Contractor's responsibility to dispose of unsuitable excavated material in an approved manner.
 2. The Contractor shall not dispose of surplus materials on wetlands or other areas prohibited by the Corps of Engineers or the Commonwealth of Massachusetts Department of Environmental Protection, or any other local authority having jurisdiction.

3.19 DUST CONTROL

- A. The Contractor shall perform dust control operations as specified in Section 01567, Environmental Protection.

3.20 CLEAN-UP

- A. The Contractor shall remove all surplus materials (earth, pipe, fittings, storage and office trailers, barricades, etc.), from the construction site.
1. All paved roadways affected by the construction shall have their full width swept clean (paved edge to paved edge) using methods which control the dust.
 2. Before the Contractor may proceed to another roadway, clean up of the previous roadway must be complete.

END OF SECTION

SECTION 02227

ROCK REMOVAL

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Remove all rock encountered while excavating for structures, roadways, or utility trenches as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02222 Earthwork for Water Distribution Systems

1.03 DEFINITIONS

- A. Rock excavation: Rock which requires explosives, wedging or impact hammer for its removal. Concrete shall be classified as rock.
- B. Boulders, slabs or other single pieces of material encountered, which are less than one (1) cubic yard shall not be considered rock.

1.04 STANDARDS

- A. All handling of explosives and blasting shall be in compliance with the pertinent sections of Commonwealth of Massachusetts Regulations (CMR) 13.00.

1.05 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. Comply with all pertinent requirements of governmental agencies having jurisdiction.

1.06 SUBMITTALS

- A. Submit plans for proposed pre-blast survey (Record purposes only).

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 NOTIFICATION

- A. When rock is encountered, it shall be uncovered and the Engineer notified.
 - 1. The Contractor shall provide the Engineer with cross sections of the rock surface or a profile of the rock where trenches are concerned.
 - 2. The Engineer shall be present when the cross sections or profiles are taken.
 - 3. The average end area method shall be used in computing the volumes wherever practicable.

3.02 LIMITS OF EXCAVATION IN ROCK

- A. Excavation in rock shall be performed, so that no projection shall come within vertical planes twelve (12) inches outside of the structure being built or twelve (12) inches below the bottom of the structure base slab and footings.

- B. In trenches, the rock shall be removed to the limits shown on the typical trench section.
 - 1. Where excavation is carried beyond the above determined limits, the additional space shall be refilled at the Contractor's expense with concrete or other specified materials.

3.03 BLASTING

- A. Pre-Blast Survey: Prior to any blasting, the Contractor shall submit a pre-blast survey.
 - 1. The survey shall satisfy the insurance requirements of the Contractor and be acceptable to the Contractor's insurance carrier, as well as provide data to assess damages to personal property and real estate due to blasting operations.
 - 2. The survey shall be complete as warranted by the nature of the work.
- B. Take all precautions necessary to warn and/or protect any individuals exposed to his operations. Such precautions shall include but not be restricted to the following:
 - 1. Present written certificate of insurance showing evidence that his insurance includes coverage for blasting operations, before doing any blasting work.
 - 2. Make necessary arrangements as may be required by the applicable Federal, State, County or Municipal codes, rules, regulations and laws, and shall be responsible for compliance.
 - 3. Obtain a permit from the local authorities to perform blasting operations.
 - a. The Engineer shall be notified in writing that such permit has been obtained.
 - 4. Schedules for blasting shall be thoroughly coordinated with the proper authorities – Federal, State, and Local.
 - a. No blasting shall be done unless the Contractor has notified all concerned parties that he may blast.
 - b. The Contractor shall also notify any commercial installation in the immediate area whose operations or instrumentation may be affected by blasting, at least twenty four (24) hours prior to blasting operations.
 - 5. Seismographic recordings shall be made of all blasting operations on the project by a qualified testing agency hired and coordinated by the Contractor.
 - a. A copy of these recordings shall be made available to the Engineer.
 - 6. Blasting shall be performed by persons who are licensed to use explosives.
 - 7. The Contractor shall keep an accurate record of each blast and submit a copy to the Engineer. The record shall show the date, time, exact stationing of the blast, the depth and number of drill holes, and kind and quantity of explosive used, and any other data required for a complete record.
 - 8. The Contractor shall be fully responsible for damages caused by his blasting operations.
 - 9. If rock below the limits of excavation is shattered by blasting, caused by holes drilled to deep, too heavy a charge of explosives or any other circumstance due to blasting, the shattered rock shall be removed and the void refilled with gravel borrow at the expense of the Contractor.
 - a. Gravel borrow shall be as specified in Section 02222 Earthwork for Water Distribution Systems.

3.04 DISPOSAL AND REPLACING OF ROCK

- A. Remove and dispose of all pieces of rock which are not suitable for use in other parts of the Work.
 - 1. Rock disposed of by hauling away to spoil areas shall be replaced by surplus excavation obtained elsewhere on the site, insofar as it is available.
- B. Fragments of rock approximately twenty five (25) pounds or less may be used in the fill areas of the site (roadway areas excluded).
 - 1. The Contractor shall place these pieces of rock in thin layers alternating them with layers of earth to be sure that all voids between the rock are completely filled with earth.
 - 2. If in the opinion of the Engineer the quantity is excessive, he may order the removal and disposal of the rock.
- C. Be responsible for obtaining spoil locations and the removal of all excess rock from the site.

END OF SECTION

SECTION 02435

REMOVING AND RELAYING EXISTING DRAINS

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work of this section consists of furnishing all labor, materials, and equipment required for removal of cast iron, concrete, reinforced concrete, corrugated metal, asbestos cement, or vitrified clay drains ranging in diameter from 4 inches to 36 inches, where required in the work, and relaying them after construction to conform with lines and grades existing prior to construction.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
1. Section 02140 Site Drainage and Dewatering
 2. Section 02160 Support of Excavation
 3. Section 02222 Earthwork for Water Distribution Systems
 4. Section 02227 Rock Removal

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION

3.01 DRAIN PIPE REMOVAL

- A. A trench of sufficient width and depth shall be excavated so that the drain pipes may be removed without damage.
1. The Contractor shall stockpile all removed sections of pipe at or near the job site.
 2. They shall be properly stacked or dispersed and protected to prevent damage.
 3. The Contractor shall replace any pipe sections that are to be relaid which may become lost, damaged or destroyed as a result of his operations, or because of his failure to properly store and protect them in a manner that would eliminate such damage or loss.
 4. Sections already damaged through no fault of the Contractor shall be replaced at the Owner's expense.

3.02 RELAYING DRAIN PIPES

- A. The trenches shall be prepared to the proper widths and depths to facilitate the installation of the pipe.
1. The subgrade shall be compacted to support the pipe or other structures until it is firm and unyielding for the entire width of the trench.
 2. Gravel or crushed stone shall be used to bed the pipe.
 3. Pipes shall be relaid to proper line and grade by utilizing batter boards or a transit or level.
 4. Pipe sections are to be thoroughly cleaned of all silt or debris prior to installation.
 5. Sections which have been damaged to such an extent that they may present future maintenance problems or may fail under loading shall not be reused.
 6. The Contractor shall be required to replace any sections damaged by negligence at his own expense.

END OF SECTION

SECTION 02513

ASPHALTIC CONCRETE PAVEMENT

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide asphaltic pavement and appurtenant items as required by the Contract Documents.
 - 1. In general the Contractor shall provide all labor, equipment, and materials, and perform all operations in connection with the installation of asphaltic pavement, berms, pavement markings, calcium chloride, final grade adjustments of valve boxes, manhole and catch basin castings, and preparation of the trench.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02222 Earthwork for Water Distribution Systems

1.03 STANDARDS

- A. All paving shall comply with the Commonwealth of Massachusetts Department of Public Works Standard Specifications for Highways and Bridges, hereinafter called Standard Specifications, as referenced.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

PART 2 PRODUCTS

2.01 GRAVEL SUBBASE

- A. Shall be as specified in Section 02222, Earthwork for Water Distribution Systems.

2.02 ASPHALTIC PAVEMENT

- A. Bottom and Top Course:
 - 1. Shall be Class I asphaltic pavement conforming to Sections 420, 460 and M3 of the Standard Specifications.

2.03 ASPHALT TACK COAT

- A. Shall consist of either emulsified asphalt, grade RS-1 conforming to Section M3.03.1, or cutback asphalt, grade RC-70 or RC-250 conforming to Section M3.02.0 of the Standard Specifications.

2.04 PAVEMENT MARKING PAINT

- A. Shall be High Heat Rapid Drying Traffic Marking Material conforming to Section M7.01.08 (White High Heat Rapid Drying Traffic Marking Material) and Section M7.01.09 (Yellow High Heat Rapid Drying Traffic Marking Material) of the Standard Specifications, as applicable.

2.05 SEAM AND CRACK SEALANT

- A. Seam and crack sealant shall be a modified asphalt-fiber compound designed especially for improving strength and performance of the parent asphalt sealant.
 - 1. The asphalt binder shall consist of a blend of neat asphalt binder and chemically modified crumb rubber (CMCR) that meets the following specifications:
 - a. PG 64-34 or PG 70-34 after modification
 - b. Viscosity of not more than 3PaS at 300°F
 - c. Modification at a minimum shall consist of 5% CMCR and the maximum particle size for the CMCE shall be 80 mesh (#80 sieve)
 - d. The performance grade of the neat asphalt binder shall not exceed a PG 58-XX
 - e. The asphalt supplier shall provide testing for the neat asphalt binder and modified asphalt binder in accordance with AASHTO M320

2. Fiber reinforcing materials shall be short-length polyester fibers having the following properties:

Length*	25in.+0.02
Elongation at break; ASTM D2256-90	38%
Melting Point; ASTM D3418-82	>475°F
Crimps/Inc; ASTM D3937-90	None
Cross Section	Round
Denier; ASTM D1577	4.5 Nominal dpf
Tensile Strength; ASTM D2256-90	>70,000 psi
Diameter	0.0085 in.**
Specific Gravity; ASTM D792-91	1.32 to 1.40

* At temperature ranging from ambient to maximum finished product mix temperature

**Subject to Normal Variations

Modified asphalt fiber compound shall be mixed at a rate of 8% fiber weight of asphalt cement.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FINAL PREPARATION OF SUBGRADES

- A. Gravel Subbase:
 - 1. Minimum compacted depth shall be shown on details, of 12 inches as measured from the bottom of the pavement.
 - 2. Spread and compacted in layers not exceeding 6 inches in depth, compacted measurement.
 - 3. All layers shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by the standard AASHTO Test Designation T99 Compaction Test Method C at optimum moisture content.

3.03 GENERAL

- A. All asphaltic pavement thickness referred to in this Section shall be compacted thickness.
- B. No asphaltic pavement shall be placed when the air temperature is below forty (40) degrees Fahrenheit, or when the material on which the mix is to be placed contains frost.
- C. Maintain asphaltic pavement under this Contract during the guarantee period of one (1) year.
 - 1. Promptly refill and re-pave all areas which have settled or are otherwise unsatisfactory for traffic.

3.04 PLACEMENT OF ASPHALTIC CONCRETE PAVEMENT

A. Temporary Pavement

1. Place after underground facilities have been installed.
2. Pavement shall be the type as specified in this Section except that “cold-mix” will be acceptable for repairs during seasonal closure of the asphalt concrete supplier.
3. Compacted thickness shall be 4 inches unless otherwise detailed on the Drawings, consisting of 2.5-inches of 3/4"-inch binder course pavement and 1.5-inches of top course pavement.

B. Permanent Paving Requirements

1. The permanent pavement shall include a 1.5-inch trench cold plane and hot mix asphalt top course Type I-1 overlay extending 6-inches beyond either edge of the trench.

3.05 CASTING ADJUSTMENTS

A. Where asphaltic pavement is to be applied, manhole and catch basin frames and valve boxes are to be adjusted to the grade of the new pavement.

1. A neat line shall be cut in the pavement around the existing frames and valve boxes.
2. The material; gravel, pavement and concrete collar (if applicable) shall be removed down to six (6) inches below the frame.
3. The frame shall be freed from its existing grout bed and shimmed with steel shims of the appropriate thickness, at a minimum of four (4) alternate locations, so as to insure that the frame will not rock. The frame shall then be set into a full bed of grout, and a concrete collar placed around the frame, up to within two (2) inches of finish grade.
4. The frame shall be protected from damage from traffic until the concrete has taken a firm set.

3.06 BERMS

A. Asphaltic Pavement Berms:

1. Berms shall be class I asphaltic Type I-1.
2. The mixture shall be placed and compacted with a machine acceptable and approved by the Engineer, for the type of berm required.
3. Placing and forming of berms by hand shall not be allowed.

3.07 DUST CONTROL TREATMENT

A. Calcium chloride shall be applied only upon direction of the Engineer.

1. The roadway shall be swept clean and calcium chloride spread at a uniform rate over the prepared gravel trench surface.

3.08 PAVEMENT MARKINGS

A. Pavement markings shall be applied as shown on the contract drawings or at locations directed by the Engineer.

1. Pavements shall have been in place 48 hours prior to the application.
2. The surface shall be prepared to accept the application in compliance with the paint manufacturer's requirements.
3. Applied to a dry film thickness of fifteen (15) mils.
4. The temperature of the pavement shall be between forty (40) degrees and one hundred twenty (120) degrees Fahrenheit.
5. No thinners are to be used for the pavement markings.
6. The equipment used for the application of pavement markings, shall be of standard commercial manufacturer. All other equipment and devices necessary for the application of pavement markings and protection thereof and for the protection of the traveling public, shall be as usually required for work of this type, and shall be furnished by the Contractor.
7. Pavement markings shall be either a single continuous line or broken line, four (4) inches wide.
8. If for any reason material is spilled or tracked on the pavement or any markings applied by the Contractor the Contractor shall remove such material.
 - a. The material shall be removed by a method that is not injurious to the roadway surface and is acceptable to the Engineer.

- b. Clean the roadway surface and prepare the surface for a re-application of the pavement markings.

END OF SECTION

SECTION 02611

DUCTILE IRON PIPE AND FITTINGS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Provide buried ductile iron water mains, fittings, and other appurtenances as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02140 Site Drainage and Dewatering
 - 2. Section 02160 Support of Excavation
 - 3. Section 02222 Earthwork for Water Distribution Systems
 - 4. Section 02640 Buried Valves and Appurtenances
 - 5. Section 02645 Hydrants
 - 6. Section 02650 Thrust Blocks and Joint Restraints
 - 7. Section 02675 Disinfection of Water Mains
 - 8. Section 02676 Testing Piping Systems

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All ductile iron pipe and fittings shall be of domestic manufacture.
- C. Coordinate the work of this Section with the work of other related Sections.
- D. All pipe materials and lubricants in contact with water shall be NSF approved for use with potable water.

1.04 INSPECTION, TESTS AND ACCEPTANCE

- A. All pipe delivered to the job site shall be accompanied by test reports certifying that the pipe conforms to AWWA C151 for Ductile Iron Pipe, Centrifugally Cast.
- B. All tests shall be made in accordance with the methods prescribed by the above mentioned AWWA Standard, and the acceptance or rejection shall be based on the test results.
- C. Pipe which does not conform to the requirements of this contract shall be immediately removed from the site and replaced by the Contractor with pipe which does conform.

1.05 STANDARDS

- A. The following American Water Works Association (AWWA) standards form a part of this specification as referenced:
 - 1. AWWA C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
 - 2. AWWA C105 Polyethylene Encasement for Ductile-Iron Pipe Systems.
 - 3. AWWA C110 Ductile-Iron and Gray-Iron Fittings.
 - 4. AWWA C111 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - 5. AWWA C150 Thickness Design of Ductile-Iron Pipe.
 - 6. AWWA C151 Ductile-Iron Pipe, Centrifugally Cast.
 - 7. AWWA C153 Ductile-Iron Compact Fittings.
 - 8. AWWA C600 Installation of Ductile Iron Mains and Their Appurtenances.

1.06 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

PART 2 PRODUCTS

2.01 PIPE

- A. Ductile Iron Pipe (Buried Service):
 - 1. All pipe shall meet the requirements of ANSI/AWWA C151/A21.51.
 - 2. Class: 52
 - 3. Joints:
 - a. Mechanical meeting the requirements of ANSI/AWWA C111/A21.11.
 - b. Push-on meeting the requirements of ANSI/AWWA C111/A21.11.
 - 4. Gaskets: Conform to ANSI/AWWA C111/A21.11.
 - 5. Lining: Conforming to ANSI/AWWA C104/A21.4
 - 6. Thickness of cement-mortar lining:
 - a. 1/8 inch for pipes 12 inches and smaller.
 - b. 3/16 inch for pipe 14 inches and larger.
 - 7. Cement-mortar lining to be seal coated per AWWA C104.
 - 8. Accessories: Pipe shall be provided with all necessary accessories to make-up the joint (glands, tee head bolts, hex nuts, etc.).

2.02 FITTINGS

- A. Fittings:
 - 1. Comply with ANSI/AWWA C153/A21.53.
 - 2. Pressure rating: 350 psi.
 - 3. Lining and coating: Same as pipe.
 - 4. Joint: Mechanical joint in compliance with ANSI/AWWA C111/A21.11.
 - 5. Markings on fittings: Comply with ANSI/AWWA C110/A21.10.

2.03 SPECIAL FITTINGS

- A. Locking Hydrant Tees: Shall be mechanical joint, each having a bell and plain end, with a split mechanical joint on the plain end. Gate valve shall be secured directly to the tee by using the standard mechanical joint gasket and standard bolts.
- B. Retainer Glands: See Section 02650, Thrust Blocks and Joint Restraints.
- C. Couplings: Shall be cast or ductile iron, consisting of a middle ring, two (2) rubber gaskets, and the followers with stainless steel bolts and nuts. Coupling and gasket shall be sized for the particular application intended. Couplings shall be as manufactured by Smith-Blair.
- D. Plugs: Shall be ductile iron with mechanical or push-on joint and retainer feature.
- E. Sleeves: Shall be ductile iron with mechanical joint, long body style meeting or exceeding the requirements of ANSI/AWWA C110/A21.10 or latest revision thereto.
- F. Transition Couplings: As required for joining pipes of different diameters shall be furnished as required and designed for compatibility with the pipe and operating pressures encountered.
 - 1. Transition couplings shall be Dresser Style 162 as manufactured by Dresser Industries Inc., or an approved equal.

2.04 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

2.05 FIELD APPLIED PIPE INSULATION

- A. The insulation shall be a minimum of two (2) inches thick having a density of 2.0 lbs. per cubic foot, and having a K-Factor of 0.14. The insulation shall be fabricated in half sections of three-foot lengths. The half section shall fit tightly over the pipe to be insulated except for the joint and fitting locations where an oversized cover shall be made to allow for any hardware.
- B. Insulation shall be Trymer 2000 as manufactured by Insulated Piping Systems, Inc. or approved equal.
- C. Jacketing to go over the insulation below ground shall be C.I. Wrap 50 as manufactured by Insulated Piping Systems, Inc. or approved equal. The jacket shall be wrapped around the circumference of the insulation and held in place with a 4-inch butt strip at each seam.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FIELD MEASUREMENTS

- A. Make necessary measurements in the field to assure precise fit of the items.

3.03 GENERAL

- A. Earthwork:
 - 1. Trench, backfill and compact for the work of this Section in strict accordance with the pertinent provisions of Section 02222, Earthwork for Water Distribution Systems.
 - 2. Shoring for the work of this Section shall be in strict accordance with Section 02160, Support of Excavation.
 - 3. Control of ground and surface water shall be in strict accordance with Section 02140, Site Drainage and Dewatering.

3.04 PIPE HANDLING

- A. Handling:
 - 1. The Contractor shall take care not to damage pipe by impact, bending, compression, or abrasion during handling, and installation. Joint ends of pipe especially shall be kept clean.
 - 2. Pipe shall be stored a minimum 4 inches above ground at a height no greater than 5 feet, and with even support for the pipe barrel.
 - 3. Only nylon-protected slings shall be used for handling the pipe. No hooks or bare cables shall be permitted.
 - 4. Gaskets shall be shipped in cartons and stored in a clean area, away from grease, oil, heat, direct sunlight and ozone producing electric motors.

3.05 INSTALLATION

- A. Pipe:
 - 1. Installation and jointing of ductile iron pipe shall be in accordance with AWWA C600 Sections 9b and 9c, latest revision, as applicable.
 - 2. In general, jointing of ductile iron push-on pipe and fittings shall be done as follows.
 - 3. The last 8 inches of the outside of the spigot end of the pipe and the inside of the bell end of pipe shall be thoroughly cleaned.

4. The joint surfaces and the gasket shall be painted with a lubricant, provided by the pipe manufacturer, just prior to making up the joint. The spigot end shall then be gently pushed home into the bell.
5. The position of the gasket shall be checked to insure that the joint has been properly made and is watertight.
6. Care shall be taken not to exceed the manufacturer's recommended maximum deflection allowed for each joint.
7. When laying is not in progress, including lunch time, the open ends of the pipe shall be closed by a watertight plug.
8. When cutting of pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe.
 - a. Cut ends of pipe to be used with a push-on type bell shall be beveled to conform to the manufactured spigot end.
 - b. Cement lining shall be inspected for damage and shall be remortared as required to ensure a continuous lining.

B. Caps and Plugs:

1. Shall be provided with a threaded corporation or bleeder valve so that air and water pressure can be relieved prior to future connection.

C. Thrust Blocking for Fittings:

1. As specified in Section 02650, Thrust Blocks and Joint Restraints.

D. Couplings:

1. Contractor shall provide all adapters and fittings such as transition couplings, as determined in the field, necessary to complete all tie-ins, whether or not specifically stated in the Specifications or on the Contract Drawings.

3.06 SPECIAL CONDITIONS

- A. Under no conditions shall ductile iron pipe be installed within 5 feet of gas lines without written permission from the Engineer at the discretion of the Owner.

3.07 TESTING

- A. Comply with the pertinent sections of Section 02676, Testing Piping Systems.

3.08 DISINFECTING

- A. Comply with the pertinent sections of Section 02675, Disinfection of Water Mains.

END OF SECTION

SECTION 02640

BURIED VALVES AND APPURTENANCES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide buried valves, valve boxes, and valve accessories, as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications
 1. Section 02140 Site Drainage and Dewatering
 2. Section 02160 Support of Excavation
 3. Section 02222 Earthwork for Water Distribution Systems
 4. Section 02611 Ductile Iron Pipe and Fittings

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 1. Materials list of items proposed to be provided under this Section.
 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 3. An exploded view diagram with a materials list.

1.04 STANDARDS

- A. The following American Water Works Association (AWWA) standards form a part of this specification as referenced:
 1. AWWA C509 Resilient-Seated Gate Valves for Water Supply Service,
 2. AWWA C504 Rubber-Seated Butterfly Valves.
 3. AWWA C500 Metal-Seated Gate Valves for Water Supply Service

PART 2 PRODUCTS

2.01 GATE VALVES

- A. Resilient Seated Gate Valves: Shall be used on all water mains equal to or less than twelve (12) inches in diameter and all hydrant branches.
 1. Valves shall be as manufactured by Mueller Co., Mueller Resilient Gate Valve or Kennedy Valve Division of I.T.T., Grinnell Valve Co. Inc., Kennedy A.W.W.A. Gate Valve, or approved equal.
 2. Meet or exceed the requirements of ANSI/AWWA C509 and C500.
 3. Joints: Mechanical joint conforming to ANSI/AWWA C111/A21.11,
 4. Cast iron body,
 5. Bronze stem,
 6. Resilient sealed wedge type:
 - a. Wedge: Fully encapsulated; no exposed iron,
 7. Triple O-ring seal stuffing box,
 8. Non rising stem,
 9. One (1) and Seven Eighths (7/8) inches square operating nut,
 10. Rated for 225 psi and tested to 500 psi,
 11. Open: Clockwise (right),
 12. All internal and external surfaces except rubber coatings shall be coated with fusion bonded epoxy to a minimum thickness of 8 mils:
 - a. Coating shall be non-toxic, impart no taste to water and shall conform to AWWA C-550.
 13. Vertical Burial

14. Working Pressure of 150 psi.

2.02 VALVE BOXES

- A. Valve boxes shall be provided for each buried valve. They shall be:
1. Domestic manufacture,
 2. Cast iron with a cast iron cover,
 3. Cover shall have the word "WATER" cast into the cover in raised letters,
 4. Valve box barrel shall not be less than (5-¼) inches in diameter,
 5. Shall be two (2) piece sliding type, providing a minimum overlap of six (6) inches,
 6. The lower section shall enclose the operating nut and stuffing box/gear box of the valve and shall have a minimum diameter of 8 inches,
 7. The box shall not transmit shock or stress to the valve.

2.03 INSERTION VALVES

- A. Insertion gate valves shall be all ductile iron resilient wedge seated gate valves.
1. Valves shall be EZ Valve™, as manufactured by Advanced Valve Technologies, LLC., or an approved equal.
 2. Meet or exceed the requirements of ANSI/AWWA C509.
 3. Joints: Mechanical joint conforming to ANSI/AWWA C111/A21.11.
 4. Insertion cut shall not disrupt pipe wall integrity.
 5. Insertion cut operation shall remove all cutting chips during the cutting operation, and shall not drop a pipe cutting coupon during the tapping operation.
 6. Valve shall operate with the standard number of turns from fully closed to fully open.
 7. Two (2) inch square operating nut,
 8. Rated for 250 psi,
 9. Open: Clockwise (right).

PART 3 EXECUTION

3.01 HANDLING AND INSPECTION

- A. Care shall be taken to prevent damage to valves and appurtenances during handling and installation. All materials shall be carefully inspected for defects in workmanship and materials.
- B. All operating mechanisms operated to check their proper functioning, and all nuts and bolts checked for tightness. Valves which do not operate easily or are otherwise defective shall be replaced at the Contractor's expense.

3.02 INSTALLATION

- A. General:
1. Construction methods for the work under this Section shall conform to the applicable portions of Section 02611, Buried Ductile Iron Pipe and Fittings, details as shown on the Contract Drawings, manufacturer's recommended installation procedures, and procedures specified herein.
- B. Valves and Appurtenances:
1. Generally, valves shall be set and aligned plumb, supported by a flat stone or solid concrete block, with the trench bottom being firmly compacted.
 2. Valve boxes shall be set centered and plumb over the operating nuts of all, direct burial valves. The top of each valve box shall be set to finished grade with at least 10 inches of overlap remaining between the upper sections for future vertical adjustment. Minimum overlap for lower, extension pieces shall be 6 inches.
 3. Valves, bolts and all other appurtenances shall be thoroughly cleaned and given a shop coat of asphaltum varnish.
 4. Ferrous surfaces obviously not to be painted shall be given a shop coat of grease or other suitable rust-resistant coating.

END OF SECTION

SECTION 02645

HYDRANTS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide hydrants as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
1. Section 02222 Earthwork for Water Distribution Systems
 2. Section 02611 Ductile Iron Pipe and Fittings
 3. Section 02640 Buried Valves and Appurtenances
 4. Section 02650 Thrust Blocks and Joint Restraints

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
1. Materials list of items proposed to be provided under this Section.
 2. Manufacturer's specifications and other data needed to insure compliance with the specified requirements.

1.04 STANDARDS

- A. The following American Water Works Association (AWWA) Standards form a part of this specification as referenced:
1. AWWA C502 Dry-Barrel Fire Hydrants.

PART 2 PRODUCTS

2.01 HYDRANTS

- A. New hydrants shall conform to AWWA Specifications tested for three hundred (300) psi water pressure and one hundred fifty (150) psi working pressure.
- B. All hydrants shall be traffic type with breakable safety feature at the ground line flange joint which is to be set no more than 3" above the adjacent and/or prevailing ground elevation as determined by the Engineer.
- C. Hydrants shall be Mueller Centurion as manufactured by the Mueller Co., Chattanooga, Tennessee; Kennedy Guardian as manufactured by the Kennedy Valve Manufacturing Co., Elmira, New York, American Darling (B-62-B) as manufactured by American Flow Control, Birmingham Alabama, or an approved equal.
1. 5" Valve opening
 2. 6" Mechanical joint connection conforming to ANSI Specification 21.11
 3. Two (2) 2-1/2 inch hose nozzles
 4. One (1) Steamer Connection
 5. Four (4) foot bury (Four (4) foot six (6) inches from ground line to invert of inlet connection).
 6. Four (4) foot six (6) inch bury (Five (5) foot from ground line to invert of inlet connection).
 7. Five (5) foot bury (Five (5) foot six (6) inches from ground line to invert of inlet connection).
 8. Five (5) foot six (6) inch bury (Six (6) foot from ground line to invert of inlet connection).
 9. Six (6) foot bury Six (6) foot six (6) inches from ground line to invert of inlet connection).
 10. Replaceable brass nozzles,
 11. Mechanical joint shoe,
 12. Open clockwise (right),
 13. Be in full compliance with AWWA C502.

14. Shall be tested for three hundred (300) psi water pressure and one hundred fifty (150) psi working pressure.
- D. Hydrants shall conform to National Standard Specification sizes in threads and nuts. Caps shall have retainer chains and rubber gaskets.
- E. The standpipe shall be of the two section traffic type and be equipped with breakable safety feature on stem and flange joint at ground line. All parts of each type and size are to be interchangeable with each other. The hydrants shall be arranged to open right, and an arrow to indicate same is to be cast thereon. The operating nut, and the nozzle cap nuts, shall be National Standard, pentagon shape measuring 1-7/8 inches from point to flat.
- F. The painting shall be white for tops and nozzle caps, and red for the standpipe above the ground line.

2.02 HYDRANT EXTENSION

- A. Extension Kit: If required to meet grade on site:
 1. Shall be provided by the hydrant manufacturer,
 2. Length shall be as needed to meet finish grade.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and condition under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FIELD MEASUREMENTS

- A. Make necessary measurements in the field to assure fit of items.

3.03 PROPOSED HYDRANT LOCATIONS

- A. All new hydrant locations shown on the Contract Drawings shall be subject to field location approval by the Owner or the Engineer.

3.04 INSTALLATION

- A. Hydrants:
 1. Trench, backfill and compact for the work of this Section in strict accordance with pertinent provisions of Section 02222, Earthwork for Water Distribution Systems.
 2. The hydrant drainage pit shall be approximately three (3) feet in diameter and filled with compacted crushed stone. While backfilling, place additional crushed stone to at least six (6) inches above the hydrant drain ports.
 3. After being thoroughly cleaned, all iron work set below ground shall be painted with two coats of asphalt varnish as specified in AWWA C504.
 4. Thrust blocking shall be placed behind the shoe of the hydrants, taking care not to block the drain outlets.
 5. The hydrant shall be set plumb and to the proper grade and shall remain properly supported until it is backfilled.
 6. All iron work left above ground shall be shop painted with two coats of paint of quality and color to correspond to the present standard of the Owner.
 7. After the hydrant has been set, it shall be entirely draped with burlap and remain covered until the water distribution system has been accepted and put into service.

END OF SECTION

SECTION 02650

THRUST BLOCKS AND JOINT RESTRAINTS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide thrust blocks and joint restraints for the water mains as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
1. Section 02140 Site Drainage and Dewatering
 2. Section 02160 Support of Excavation
 3. Section 02222 Earthwork for Water Distribution Systems
 4. Section 03301 Cast-In-Place Concrete for Water Mains

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
1. Materials list of items proposed to be provided under this Section.
 2. Manufacturer's specifications and other data needed, to insure compliance with the specified requirements.

PART 2 PRODUCTS

2.01 POURED CONCRETE THRUST BLOCKS

- A. Concrete shall be as specified in Section 03301, Cast-In-Place Concrete for Water Mains.
1. Minimum concrete strength shall be 3,000 psi after 28 days.

2.02 PRECAST THRUST BLOCKS

- A. Thrust blocks shall be precast concrete blocks.
1. Minimum concrete strength shall be 3,000 psi after 28 days.
 2. Precast concrete blocks shall have built in recessed handles for lifting.

2.03 JOINT RESTRAINTS

- A. Mechanical joint restraint shall be Megalug 1100 Series as manufactured by EBAA Iron Sales Inc., Eastland, Texas, or an approved equal
1. Glands shall be manufactured of ductile iron conforming to ASTM A536.
 2. The wedges shall be ductile iron, heat treated to a minimum hardness of 370 BHN
 3. Shall have a minimum working pressure of 350 psi for pipe diameters up to 16 inches with a minimum safety factor of 2:1.
 4. Twist-off nuts.

2.03 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 EXECUTION

3.01 THRUST BLOCKS

- A. Concrete thrust blocks shall be provided at all hydrants and fittings.
 - 1. The backs of thrust blocks shall be placed against undisturbed earth and the sides shall be formed.
 - 2. Felt roofing paper shall be placed to protect pipe joints.
 - 3. Concrete shall not be placed over bolts or nuts.

3.02 JOINT RESTRAINTS

- A. Mechanical joint restraint devices shall be installed at all fittings in accordance with the manufacturer's written instructions.

END OF SECTION

SECTION 02660
SERVICE CONNECTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. Work included: Provide potable water service connections as required by the Contract Documents.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02222 Earthwork for Water Distribution Systems
 - 2. Section 02611 Ductile Iron Pipe and Fittings
 - 3. Section 02640 Buried Valves and Appurtenances

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed, to insure compliance with the specified requirements.
 - 3. AWWA 75-CR Type K copper tubing.

1.04 STANDARDS

- A. The following Standards form a part of these Specifications as referenced:
 - 1. AWWA C800 Underground Service Line Valves and Fittings.

1.05 QUALITY ASSURANCE

- A. Codes and Standards
 - 1. Plumbing Code Compliance: Comply with applicable portions of National Standard Plumbing Code pertaining to selection and installation of potable water system materials and products.
 - 2. Water Purveyor Compliance: Comply with requirements of Purveyor supplying water to project, obtain required permits and inspections.
- B. Compliance
 - 1. The Owner may require an affidavit from the manufacturer or vendor that the products furnished comply with all applicable provisions of AWWA C800 and AWWA C901.

1.06 COMPLIANCE WITH REDUCTION OF LEAD IN DRINKING WATER ACT AND SECTION 1417 OF THE SAFE DRINKING WATER ACT (SDWA)

- A. All pipes, pipe fittings, plumbing fittings and fixtures must meet the requirements of the 2011 Reduction of Lead in Drinking Water Act and amendments to SDWA Section 1417 for potable water use.
- B. Certification of compliance shall be provided for all applicable materials herein.

PART 2 PRODUCTS

2.01 GENERAL

- A. All materials shall be of domestic manufacture.
- B. The Owner has standardized on the following products listed in this Section for service connections.

2.02 SERVICE TUBING

- A. Copper Service Tubing
 1. Conform to ASTM B88.
 2. Shall be type "K" soft temper.
 3. Name or trademark of the manufacturer shall be stamped along the pipe.

2.03 CORPORATION STOPS

- A. Corporation Stop: Shall be as manufactured by Ford Water Service Products.
 1. Comply with AWWA C800, Underground Service Line Valves and Fittings.
 2. Cast alloy brass body.
 3. Ball type.
 4. PTFE coated ball.
 5. Double O-ring seals.
 6. 300 psi working pressure.
 7. AWWA taper thread for inlet and CTS compression end at outlet.

2.04 CURB STOPS

- A. Curb Stops shall be as manufactured by Ford Water Service Products.
 1. Comply with AWWA C800, Underground Service Line Valves and Fittings.
 2. Cast alloy brass body.
 3. Ball type.
 4. PTFE coated ball.
 5. Quarter turn check.
 6. Double O-ring seals.
 7. 300 psi working pressure.
 8. Compression ends for CTS OD tubing.
 9. Open: counterclockwise (left).

2.05 CURB BOXES

- A. Curb boxes shall be as manufactured by Mueller Co.; Model No. H-10334 (1-inch service) and Model No. H-10310 (1.5-inch and 2-inch service).
 1. Two (2) piece slide type with one (1) piece lid.
 2. Five (5) foot bury with arch pattern base.
 3. Provided with 36-inch stationary shut-off rod.

2.06 SERVICE SADDLE

- A. Service saddle shall be used on all corporations larger than one (1) inch installed in eight (8) inch water mains.
 1. As manufactured by Clow (model: F-1280) or approved equal.
 2. Double stainless steel strap design.
 3. Epoxy coated ductile iron body.
 4. AWWA threads with Buna-N rubber gasket.
 5. Meet all applicable parts of ANSI/AWWA C800.

2.07 ADAPTER COUPLING

- A. Adapter couplings for connecting new copper tubing to existing service connections at the property lines and/or at existing corporation stops shall be straight coupling fittings.
 1. As manufactured by Ford Water Service Products, or an approved equal.
 2. Conform to AWWA C800.

2.08 METER PITS

- A. Meter pits for two (2) inch water services shall be provided by the Owner.

2.09 METER SPACER ASSEMBLY

- A. Meter spacer assemblies shall be provided by the Owner.

PART 3 EXECUTION

3.01 INSPECTION

- A. Service tubing which does not conform to the requirements of this specification shall be immediately removed from the site by the Contractor

3.02 HANDLING PIPE

- A. The Contractor shall take care not to damage pipe by impact, bending, compression, or abrasion during handling, and installation. Joint ends of pipe especially, shall be kept clean.

3.03 SERVICE LOCATIONS AND SHUT-DOWNS

- A. All new service locations shown on the Contract Drawings shall be subject to field location approval by the Engineer and/or Owner.
- B. Where a water service must be shut-down, it shall be the Contractor's responsibility to contact the party owning the service to arrange a shut-down schedule prior to doing any work.
 - 1. All such schedules must be approved prior to shut-down.
 - 2. Shut-down time shall be kept to a minimum so as to keep service off for the shortest possible time.

3.04 INSTALLATION OF TUBING

- A. SERVICE TUBING
 - 1. Where directed by the Engineer, the Contractor shall install new services including 1-inch thru 2-inch tubing.
 - 2. For services outside the paved areas, trench excavation shall be utilized, with tubing being carefully laid in the bottom of the trench, backfill placed and compaction completed.
 - a. Care shall be taken to insure against kinks or crushed areas.
 - 3. Backfill around and to one (1) foot over the tubing shall not contain stones greater than one (1) inch in diameter.
 - 4. For services to be installed beneath paved surfaces, a pneumatic drive device such as "Hole Hog" or equal, trenchless method may be utilized to drive the new service beneath the pavement at no additional cost to Owner.
 - 5. Service tubing between the corporation stop and the curb stop shall be one (1) piece.
 - 6. Coupling shall not be allowed except for two (2) inch services greater than 200 feet in length.
 - 7. Tubing shall be connected to the curb stop and compression joints tightened.
 - 8. Duct tape shall be installed over the outlet end of curb stops, to be left for future connections.

3.05 APPURTENANCES

- A. Corporation Stops.
 - 1. Provide the necessary tap, sized for the fitting.
- B. Curb Stops and Boxes.
 - 1. Install curb stops where shown on the Drawings.
 - 2. Place valve box over stop, taking care that it is installed plumb.
 - 3. Curb stops shall be key checked after adjustment of curb box to final grade.
 - a. Box shall be removed and reset over curb stop if curb stop not centered in box.

3.06 CURB STOP LOCATIONS

- A. Unless otherwise directed, the new curb stops shall be generally located two (2) feet back from the curb line face, but in no case is a compression fitting to be installed within ten (10) feet of a building foundation with also installing a bonding jumper.

END OF SECTION

SECTION 02667

TEMPORARY POTABLE WATER PIPING AND SERVICE CONNECTIONS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide temporary potable water piping and service connections as required by the Contract Documents.
 - 1. In general, the Contractor shall provide temporary distribution piping and hydrants, piping disinfection, connections to supply sources (hydrants or pipe lines), service connections to properties presently being supplied, access to ramps where temporary pipe line crosses driveways, trenching across roadways for temporary main services and all other work necessary to provide temporary potable water service to properties affected by the project.
 - 2. All temporary bypass piping shall be recessed.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to:
 - 1. Section 02222 Earthwork for Water Distribution Systems
 - 2. Section 02675 Disinfection of Water Mains

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to insure compliance with the specified requirements.

1.04 STANDARDS

- A. The following Standards form a part of these specifications as referenced:
 - 1. ASTM D-1784 (PVC, Type 1, Grade 1, Class 12454/B)
 - 2. ASTM D-2241 (PVC Plastic Pipe) pressure rated
 - 3. ASTM D-3130 (Joints and Couplings)
 - 4. ASTM F-477 O-Rings
 - 5. AWWA C651 Water Main Chlorination

1.05 QUALITY ASSURANCE

- A. Codes and Standards
 - 1. Plumbing Code Compliance: Comply with applicable portions of National Standard Plumbing Code pertaining to selection and installation of potable water system materials and products.
 - 2. Water Purveyor Compliance: Comply with requirements of purveyor supplying water to project, obtain required permits and inspections.
 - 3.

1.06 COMPLIANCE WITH REDUCTION OF LEAD IN DRINKING WATER ACT AND SECTION 1417 OF THE SAFE DRINKING WATER ACT (SDWA)

- A. All pipes, pipe fittings, plumbing fittings and fixtures must meet the requirements of the 2011 Reduction of Lead in Drinking Water Act and amendments to SDWA Section 1417 for potable water use.
- B. Certification of compliance shall be provided for all applicable materials herein.

PART 2 PRODUCTS

2.01 TEMPORARY DISTRIBUTION PIPING

- A. General

1. All materials in contact with potable water shall have NSF 61 approval.
- B. Bypass Piping:
 1. Size: Four (4) inches.
 2. PVC SDR 21 or approved equal.
 3. Wall thickness 0.214 inches.
- C. Service Piping/Tubing
 1. Size: ¾ inch to 4-inch polybutylene or approved equal.
 2. Pressure class 160.
 3. Meet the requirements of ANSI / AWWA C902.
- D. Couplings:
 1. O-Ring type.
 2. Locking splines to insure coupling remains under pressure.
- E. Connection Fittings
 1. Provide all the necessary fittings, adapters, clamps, couplings and etc. to complete the service piping/tubing connections from the temporary potable water piping to the property being served.
- F. Temporary Hydrants
 1. Pumper Outlet Size: 4-½ inch diameter

PART 3 EXECUTION

3.01 GENERAL

- A. The temporary distribution pipe shall be installed as required to provide potable water service where potable water service presently exists.
 1. When necessary, the Contractor shall provide below ground taps to provide potable water service where fire hydrants cannot be used.
 2. All temporary distribution piping connections to fire hydrants shall be made in such a manner that if it becomes necessary, they can be easily removed so that the fire hydrant can be used for firefighting purposes, with a minimum of effort.
 3. Temporary hydrants shall be provided every 500 feet along the length of the project area.
 4. At roadway crossings the temporary distribution pipe shall be installed in a shallow trench and adequately protected to prevent breakage and shall be overlaid with temporary bituminous surfacing.
 5. At driveways crossings the temporary distribution pipe shall be recessed.
 6. The Contractor shall recess all temporary bypass piping.
 7. The Contractor shall furnish and maintain cones, barricades, flashing lights, signage and etc. during the time period in which the temporary potable water piping system is installed.
 8. The Contractor shall coordinate temporary hydrants with the fire chief.

3.02 INSTALLATION

- A. Prior to installing any section of temporary distribution piping, the Contractor shall consult with the local Fire Department and the Owner and shall make any modifications to the piping that may be required by these agencies.
 1. The temporary distribution piping and service pipe shall be chlorinated in accordance with AWWA C651.
 2. The operation of all valves utilized in connection with this Contract shall be performed by a representative of the City.
 3. Temporary valving shall be provided to isolate sections of the temporary potable water piping.
 4. Service connections shall be provided at required locations or as requested by the Owner.
 5. A valved blow-off line shall be provided.

3.03 MAINTENANCE AND REMOVAL

- A. The Contractor shall maintain the temporary potable water piping in a safe and operative condition at all times.
 1. No temporary potable water piping shall be installed in freezing weather and such piping already in use shall be removed and drained.
- B. The Contractor shall remove the temporary potable water piping after the water main installation has been completed, tested, chlorinated and accepted by the Owner, and the new service connections installed.

- C. The Contractor shall leave the street and adjacent properties in a neat and orderly condition and in every respect equal to or better than their original condition.

END OF SECTION

SECTION 02675

DISINFECTION OF WATER MAINS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Disinfecting water mains and their appurtenances, as required by the Contract Documents.
- B. The procedure for disinfecting water mains, as described in this section, generally consists of the following steps:
 - 1. Inspecting materials to be used to ensure their integrity.
 - 2. Preventing contaminating materials from entering the water main during storage, construction, or repair and noting potential contamination at the construction site.
 - 3. Removing, by flushing or other means, those materials that may have entered the water main or appurtenances.
 - 4. Preventing contamination of existing mains from cross-connection during flushing, pressure testing, and disinfection.
 - 5. Pressure testing the water main to ensure the main meets the specified allowable leakage rate. Hydrostatic pressure tests should be conducted with potable water.
 - 6. Chlorinating and adequately documenting the process used for disinfection.
 - 7. Flushing the chlorinated water from the main. Refer to ANSI/AWWA C655 Field Dechlorination for dechlorination procedures, if dechlorination is required.
 - 8. Determining the bacteriological quality of water samples collected from the pipe by laboratory test after disinfection.
 - 9. Final connecting of the newly disinfected water main to the active distribution system without sacrificing sanitary practices and conditions.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02611 Ductile Iron Pipe and Fittings
 - 2. Section 02676 Testing Piping Systems

1.03 SUBMITTALS

- A. The Contractor shall prepare a plan for disinfecting water mains and their appurtenances that describes the proposed schedule, the location of all sampling and flushing points, and the overall procedure for disinfecting. The plan shall also present the proposed chemicals to be employed, the strength of the chemicals and the equipment employed to apply them. The plan shall be presented to the Engineer for review not less than two weeks prior to the proposed time for disinfecting the water mains.
- B. Copies of all test results, as specified herein, shall be submitted directly to the Engineer from the laboratory that conducted the tests.

1.04 STANDARDS

- A. The following standards are referenced, in part, in this specification:
 - 1. Specific sections, or portions thereof, of AWWA C651 Disinfecting Water Mains (most recent edition), as further described herein.

1.05 COST OF DISINFECTING WATER MAINS

- A. All costs associated with disinfecting water mains, including water, chemicals and bacteriological analysis of samples, as further described in this Section, shall be paid for by the Contractor.
 - 1. Duplicate samples collected by Engineer for bacteriological analysis will be paid for by the Owner.

- B. The Owner shall furnish water free for flushing and testing the water main if hydrants or other connection points are convenient to the work. Otherwise, the Contractor shall be responsible for securing an acceptable potable water supply at no additional cost to the Owner. Additional water required for flushing and re-testing as a result of bacteriological testing or Contractor's error shall be billed to the Contractor at the Water Department's normal billing rate.
- C. The Contractor shall be responsible for maintaining all water mains/water containment tanks in a disinfected condition up to the date of Substantial Completion. The Contractor shall be responsible for performing bacteriological testing within three days (3) of the Contractor's request for substantial completion to demonstrate compliance with this requirement.

PART 2 MATERIALS

2.01 WATER

- A. Water for flushing of water mains, preparation of chlorine solutions and filling of water mains for disinfection shall be potable drinking water.

2.02 CHEMICALS

- A. Chlorine for preparation of chlorine solutions for disinfection shall be sodium hypochlorite or calcium hypochlorite and shall conform to the requirements of ANSI/AWWA B300.
- B. Chlorine solutions shall be neutralized prior to disposal using sodium bisulfite, sodium sulfite or sodium thiosulfate.

2.03 WATER SAMPLE BOTTLES

- A. Sterile water sample bottles shall be obtained from a state certified laboratory.
 - 1. Sterile bottles for bacteriological analyses shall be treated with sodium thiosulfate to neutralize any residual chlorine.
 - 2. Two samples are required at each specified sampling point. One sample shall be analyzed for the presence of coliform bacteria and one sample shall be analyzed for the presence of heterotrophic plate count (HPC) bacteria.

PART 3 EXECUTION

3.01 WATER MAIN DISINFECTING

- A. After completion of all water main related construction, except water service connection installation, all water mains, valves, hydrants, hydrant connections and other appurtenances installed under this Contract shall be disinfected in accordance with AWWA Standard C651, Section 4.4.3 (Continuous Feed Method), as modified herein.
 - 1. Taps for flushing, chlorination and sampling shall be installed by the Contractor at no additional expense to the Owner.
 - 2. Flush the new water mains with potable water to remove any contaminants and debris that may have entered the water mains during construction.
 - 3. The flushing velocity in the new water mains shall not be less than 3.0 feet per second. In the absence of a flow meter, flow rate shall be determined either by placing a pitot gage at the discharge or by measuring the time to fill a container of a known volume.
 - 4. Prepare a chlorine solution that will be continuously fed into the potable water that is used to fill the new water mains.
 - 5. The chlorine solution shall be applied to the new water mains with a chemical feed pump designed to feed chlorine solutions.
 - 6. Completely fill the new water mains with the chlorinated, potable water to remove any air pockets. The point of application shall be no more than 10 feet downstream from the beginning of the new water mains.
 - 7. The chlorine solution shall be of sufficient strength to provide a minimum residual chlorine concentration of 25 milligrams per liter (mg/L) in the filled water mains.
 - 8. The disinfection solution in HDPE pipe must not exceed 12 percent active chlorine.

9. New valves and hydrants shall be operated to ensure their proper disinfection.
10. Isolation valves shall be maintained in a closed position to prevent chlorinated water from entering the existing water distribution system.
11. Chlorinated water shall remain in the main for a minimum of 24 hours.
12. The minimum residual chlorine concentration at the end of the 24 hour holding period shall be 10 mg/L.
13. After the 24 hour retention period, chlorinated water shall be flushed from every hydrant branch on the main until the chlorine concentration leaving the main is no higher than that generally in the system or less than 1.0 mg/L.
14. Chlorinated water shall be discharged in a manner that will not adversely affect flora and fauna or drainage courses and shall conform to applicable State regulations for waste discharge.
15. Chlorinated water that is flushed from the mains shall be neutralized by the addition of a dechlorinating agent so that the residual chlorine concentration is zero.
16. The location of the discharge for the dechlorinated water shall be approved by the Engineer and the Owner.

3.02 BACTERIOLOGICAL TESTS

- A. A minimum of 16 hours after flushing and before the new water mains are placed in service, the Contractor shall collect water samples for testing of the bacteriological quality of the water.
 1. No hose or fire hydrant shall be used in the collection of samples.
 2. A sampling tap shall consist of a standard corporation stop installed in the main with a PVC or copper gooseneck assembly.
 3. Samples for bacteriological testing shall be collected in sterile bottles treated with sodium thiosulfate and furnished by the state certified laboratory that will perform the tests.
 4. A private company specializing in this field shall chlorinate the main, take the samples and have the same tested by an approved laboratory.
 5. Unless otherwise directed by the Engineer or the Owner, the minimum number of samples for bacteriological analysis shall be as follows:
 - a. Sample sets every 1,200 linear feet of newly installed water mains.
 - b. Sample sets at the end of the newly installed water mains.
 - c. Sample sets at each branch that is greater than one pipe length.
 6. One round of sampling shall be conducted on water distribution systems that continuously maintain a chlorine residual.
 7. Two rounds of sampling shall be conducted on water distribution systems that do not continuously maintain a chlorine residual. The second round of sampling shall be conducted a minimum of 24 hours after the first round of samples is taken.
- B. All bacteriological tests shall be performed by a state certified laboratory.
 1. Two bacteriological tests shall be performed on all samples:
 - a. One coliform bacteria, and
 - b. One heterotrophic plate count (HPC) bacteria.
 2. Test results on all samples and a copy of the chain of custody shall be mailed directly to the Engineer and Owner from the laboratory.
 3. The disinfection procedure shall be considered satisfactory only if the results of all tests confirm the following:
 - a. The absence of coliform bacteria in all samples taken, and
 - b. The HPC bacteria are less than 500 colony forming units per milliliter (cfu/mL) in all samples taken (unless the water supplier has established a stricter HPC limit from baseline data for their water distribution system, in which case the results of the HPC bacteria tests shall meet the stricter limit).
 4. The new water mains may be placed in service if the results of the disinfection procedure are satisfactory and the Engineer and Owner have granted their permission.
 5. If the initial disinfection procedure fails to produce satisfactory results, the new water mains shall be flushed and resampled as described above. If the test results from the resampling also fail to produce satisfactory results, the entire disinfection procedure shall be repeated.

END OF SECTION

SECTION 02676

TESTING PIPING SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included: Provide pressure/leakage tests as required by the Contract Documents.
- B. Only new water mains shall be pressure tested. Cleaned and lined water mains shall not be pressure tested.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02611 Ductile Iron Pipe and Fittings
 - 2. Section 02640 Buried Valves and Appurtenances
 - 3. Section 02675 Disinfection of Water Mains

1.03 STANDARDS

- A. The following American Water Works Association Standard shall form a part of this specification as referenced:
 - 1. AWWA C600 Installation of Ductile Iron Water Mains and Their Appurtenances.

PART 2 PRODUCTS

2.01 WATER

- A. The Owner shall furnish water free for flushing and testing the water main if hydrants or other connection points are convenient to the work. Otherwise, the Contractor shall be responsible for securing an acceptable potable water supply at no additional cost to the Owner. Additional water required for flushing and re-testing as a result of Contractor's error or defective work shall be billed to the Contractor at the Owner's normal billing rate.

PART 3 EXECUTION

3.01 TESTING

- A. A formal pressure/leakage test shall be required of the water mains, valves and appurtenances in the system constructed.
 - 1. The pressure/leakage test shall be conducted in accordance with these specifications and the applicable requirements of AWWA C600, Section 5.
 - 2. Where any section of a water main is provided with concrete thrust blocks, the test shall not be made until at least 5 days have elapsed since the concrete was placed.
 - 3. If high-early-strength cement is used in the concrete thrust blocks, the test shall not be made until at least 2 days have elapsed since the concrete was placed.
 - 4. Prior to testing the pipeline or section thereof, the section to be tested shall be thoroughly flushed and all air expelled. All air shall be expelled by appropriate methods including the use of corporation stops installed by the Contractor, at no additional cost to the Owner, at high points along the water main. All corporations used for testing shall be removed and the water main plugged after the water mains have been successfully tested and approved at no expense to the Owner.
 - 5. After all the air has been expelled and the corporation stops closed, the test pressure shall be applied by means of a pump connected to the pipe.
 - 6. The pump, pipe connections, and all necessary apparatus including gages, shall be furnished by the Contractor.
 - 7. Unless otherwise specified, the test pressure shall be 150 psi or 150 percent of the working pressure, whichever is greater, but in no case shall the pressure exceed 250 psi.
 - 8. This pressure shall be maintained for 2 hours.

9. Any excessive indicated leakage as determined by the pressure test shall be located and repairs made. The total leakage from the pipeline or sections thereof shall not exceed the amount shown in Table 1 of this Specification Section.
10. Should the pipeline or sections thereof not come within the permissible leakage limits, the Contractor (at his own expense) shall be required to excavate and locate the source of leakage and make repairs.
11. After the Contractor has notified the Engineer that repairs have been made, the test shall be repeated until the pipeline or sections thereof are within the allowable leakage.

Table 1

Avg. Test Pressure (psi)	Ductile and Gray Cast Iron mains						
	<u>Allowable Leakage per 1000 Ft.</u>						
	<u>Nominal Pipe Diameter (inches)</u>						
	<u>6</u>	<u>8</u>	<u>10</u>	<u>12</u>	<u>16</u>	<u>20</u>	<u>24</u>
350	0.76	1.01	1.26	1.52	2.02	2.53	3.03
300	0.70	0.94	1.17	1.40	1.87	2.34	2.81
250	0.64	0.85	1.07	1.28	1.71	2.14	2.56
200	0.57	0.76	0.96	1.15	1.53	1.91	2.29
150	0.50	0.66	0.83	0.99	1.32	1.66	1.99
100	0.41	0.54	0.68	0.81	1.08	1.35	1.62

* Leakage allowable based on gallons per hour per 1000 feet of main.

END OF SECTION

SECTION 02766

CLEANING AND LINING EXISTING WATER MAINS

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work of this section consists of all labor, materials and equipment required to clean and cement-mortar line in place and all other incidental work the existing water mains as required and called for herein and shown on the Contract Drawings.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to:
1. Section 02222 Earthwork for Water Distribution Systems
 2. Section 02675 Disinfection of Water Mains
 3. Section 02676 Testing Piping Systems
 4. Section 02769 Television Inspection

1.03 STANDARDS

- A. American Society for Testing and Materials (ASTM)
1. ASTM C40 Organic Impurities in Fine Aggregates for Concrete
 2. ASTM C143 Slump of Hydraulic-Cement Concrete
 3. ASTM C150 Portland Cement
 4. ASTM C494 Chemical Admixtures for Concrete
 5. ASTM C618 Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- B. American Water Works Association (AWWA)
1. AWWA C602 Cement-Mortar Lining of Water Pipelines in Place – 4 In. (100 mm) and Larger
 2. AWWA C651 Disinfecting Water Mains

1.04 SUBMITTALS

- A. Six sets of complete detailed description of the methods and materials to be used in the cleaning and lining shall be submitted. Included shall be the anticipated excavation locations and a time-line progress and completion schedule.
- B. The Contractor shall furnish an affidavit that all material and work furnished under this section complies with the requirement of AWWA C602.

PART 2 MATERIALS

2.01 PORTLAND CEMENT

- A. Portland cement shall conform to Type I or Type II of ASTM C150.

2.02 POZZOLANIC MATERIAL

- A. Pozzolanic material shall consist of siliceous or a combination of siliceous and aluminous material in a finely divided form that in the presence of moisture will react with calcium hydroxide, at ordinary temperatures, to form compounds possessing cementing properties. Pozzolanic material shall fulfill the requirements of ASTM C618.

2.03 ADMIXTURES

- A. To improve workability, density, and strength in the mortar, admixtures conforming to ASTM C494 may be used at the option of the Contractor, provided that the ratio of admixture to Portland cement does not exceed the use in

the qualification tests of ASTM C494. No admixtures shall be used that would have a deleterious effect on potable water flowing in the pipe after the lining has been placed.

2.04 SAND

- A. Sand shall consist of inert granular material. The grains shall be strong, durable, and uncoated. The sand shall be well-graded and shall pass a No. 16 mesh screen, with not more than five percent passing a No. 100 sieve.
- B. Sand shall be clean and free from injurious amounts of dust, clay, lumps, shale, soft or flaky particles, mica, loam oil, alkali, and other deleterious substances. The total weight of such substances shall not exceed three percent of the combined weight of the substances and the sand that contains them.
- C. Sand shall not show a color value darker than the “reference standard color solution” prepared as required in ASTM C40.

2.05 WATER

- A. Potable water shall be used when mixing the mortar. Contractor shall provide all potable water required during construction.

2.06 CEMENT-MORTAR LINING

- A. Mortar for the lining shall be composed of cement, sand, and water that have been well mixed and are of such consistency as to produce a dense, homogenous lining. Unless otherwise specified by the purchaser, the mortar may also include admixtures and pozzolanic materials.
- B. The approximate proportions of cement and sand in the mortar for the lining shall be one part of Portland cement to one and a half parts of sand by volume. The exact proportion shall be determined by the characteristics of the sand used. Pozzolanic materials, if used, shall be substituted for a part of the Portland cement in a proportion of approximately one part pozzolanic material to five parts portland cement by volume. Admixtures, if added, shall be used in strict compliance with the manufacturer’s recommendations.
- C. The water content shall be the minimum quantity that produces a workable mixture, with full allowance made for moisture collection on the interior of the pipe surfaces. Slump tests should be made periodically on freshly mixed mortar immediately prior to the mortar being conveyed to the lining machine. The test shall be made in accordance with ASTM C143.
- D. Mortar shall be mixed long enough to obtain maximum plasticity. The mortar shall be used before initial set.

PART 3 EXECUTION

3.01 ACCESS OPENINGS - GENERAL REQUIREMENTS

- A. All access openings necessary for the lining work shall be prepared and closed by the Contractor in accordance with the provisions of Section 02222 Earthwork for Water Distribution Systems.

3.02 MISMARKED MAINS

- A. A mismarked main is defined as an excavation and pipe opening made by the Contractor at a point marked by the Owner as being a transition point between existing unlined and lined pipe which proves not to be the transition point, or an excavation made by the Contractor at a point marked by the Owner as being a valve, branch, main or other fitting where the actual location proves to be greater than four (4) feet horizontally from the marked location.
- B. If, within the same excavation as described above, the Contractor finds the mismarked main then no additional payment will be made for the mismarked main.

3.03 PREPARATION OF PIPE SURFACE

- A. The interior surfaces of pipe to be lined shall be cleaned by a method approved by the Engineer to remove corrosion products, chemical or other deposits, loose and deteriorated remains of old coating materials, oil, grease, and accumulations of water, dirt, and debris.

- B. Shot or sandblasting is not required to prepare surfaces for lining. When the method of cleaning the pipe does not include the use of water, all laterals 2-inches and larger in diameter shall be cleared prior to lining. Laterals less than 2-inches in diameter shall be cleared after lining as described in Section 3.05.

3.04 MACHINE APPLICATION OF MORTAR LINING

- A. Immediately prior to the travel of the lining machine through a pipeline, all foreign material shall be removed. This includes sand and loose mortar that might have accumulated since the preparation of surfaces was completed.
- B. The lining shall be applied in one course or more by a machine traveling through the pipe and distributing the mortar uniformly across the full section and long radius bends of the pipe.
- C. The discharge shall be from the rear of the machine so that the newly applied mortar will not be marked. The rate of travel of the machine and the rate of mortar discharge shall be mechanically regulated to produce a smooth surface and uniform thickness throughout.
- D. The mortar shall be densely packed and adhere wherever applied; there shall be no injurious rebound.
- E. The lining shall be uniform in thickness within the allowable tolerance, except at joints or deformations in the pipeline. Cement-mortar lining thickness shall be 3/16-inch thick.

3.05 SURFACE FINISH

- A. The mortar lining shall be mechanically troweled, except for the places where hand troweling lining is expressly allowed.
- B. Troweled Linings: The lining machine shall be provided with attachments for mechanically troweling the mortar. Both the application and troweling of the mortar shall take place at the rear of the machine so that the freshly placed and troweled mortar will not be damaged. The trowel attachment shall be such that the pressure applied to the line will be uniform and produce a lining of uniform thickness with a smooth, finished surface, free of spiral shoulders.
- C. Untroweled Linings: The finished surface shall be smooth and regular, except that it may exhibit a slightly dimpled appearance similar to the surface of an orange. Ridges or uneven buildup caused by irregularity in the travel rate of the machine shall not be allowed.
- D. Allowable Untroweled Lining: Untroweled cement-mortar lining is acceptable in the lining of pipe that is excessively out of round, and in pipe 20 inches in diameter and under, when lining pipeline segments containing cocked joints, sharp bends, and angle points.

3.06 SPECIAL REQUIREMENTS AT LATERALS AND SERVICE CONNECTIONS

- A. Laterals and connections to the pipe that are being lined shall be left unobstructed after the lining operations.
- B. After the mortar lining has been placed, but before it takes final set, laterals and services 2 inches and smaller in diameter shall be cleared by backflushing with air, wherever necessary or as required by the Engineer. The backflushing must be accomplished in a manner that will not damage the freshly applied lining.
- C. Unless it is to be cleaned and lined, replaced, or necessary for the installation of bypass piping, no lateral shall be excavated.
- D. The Contractor shall clean all interior surfaces of the mainline valves after the lining machine has passed. The Contractor may, with the Owner's approval, remove the bonnets and gates from mainline gate valves in order to accomplish the cleaning; bonnets and gates shall then be replaced.
- E. The Contractor shall, with the Owner's approval, remove all butterfly valves from the mainline when necessitated by the operations and then reinstall them after the lining operation. New bolts and gaskets for bonnet or valve replacements meeting the requirements of the applicable AWWA valve standard shall be supplied and installed by the Contractor.

3.07 CURING

- A. Curing operations shall begin immediately following completion of the machine placement of the mortar lining in a section of pipeline. The section of pipe shall be closed with airtight covers over all openings and shall be maintained in a moist condition.
- B. When a section of pipeline has been completed, the Contractor shall be responsible for careful curing of the mortar lining until the section is filled with water by the Owner, or until the lining has been accepted by the Owner, but in no case for more than seven days. In the event that the Owner cannot fill the pipeline within seven days after the lining has been placed, the Contractor may be directed to extend the curing period, and the Contractor shall be paid for this as extra work.
- C. The exterior surfaces of pipe exposed to sunlight shall be sprinkled with water in the daytime during the period of lining, finishing, and curing when such sprinkling is required, as determined by the Contractor or the Engineer, to prevent cracking of the lining.

3.08 ACCEPTANCE OF CLEANED AND LINED PIPE

- A. Upon the completion of the cleaning and lining of the water main and the clearing of laterals and water services, the water main shall be inspected in accordance with Section 02769.
- B. After the completion and acceptance of the TV inspection, the water main shall be disinfected in accordance with Sections 02675 of the contract documents.
- C. After the water main has been inspected, disinfected and approved for acceptance and potable use by the Owner, it shall be tied into the water distribution system.

END OF SECTION

SECTION 02769

TELEVISION INSPECTION

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work of this section includes the furnishing of all labor, materials and equipment necessary to televise and video tape the cleaned and lined water pipes after rehabilitation.

1.02 RELATED WORK

- A. None required under this Section.

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section. The contractor shall provide references and sufficient equipment to perform the work.

1.04 COORDINATION

- A. Coordinate the work of this Section with subcontractors, suppliers and other trades which might be affected by the schedule and completion of this work. The Contractor shall provide a schedule for completion of work and provide weekly updates to the schedule as applicable.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 PREPARATION

- A. Bypass pumping shall be employed to maintain flow in the rehabilitated pipes at all times.

3.02 TELEVISION INSPECTION

- A. The equipment employed in the television inspection shall be specifically manufactured for the inspection of rehabilitated pipes. Lighting shall be sufficient to provide a clear picture and camera shall operate satisfactorily in 100% humidity atmosphere and have a minimum of 600 line-resolution. The camera vehicle assembly shall be capable of slowing down or stopping at areas of interest (e.g. joints, cracks). At areas of interest, the camera shall be capable of rotating its lens 360 degrees to obtain a clearer, more direct viewing angle. The camera assembly shall record in full color and all monitors and video tape recordings shall be in full color.
- B. All conditions observed during the inspection shall be recorded in writing on inspection logs by the Contractor, including the condition of the rehabilitated pipe, the location of service connections and similar observations related to the conditions of the pipe. A copy of the written logs shall be provided to Engineer. A video tape recording of all television inspections shall also be provided to Engineer.
- C. All personnel employed by Contractor in television inspection of rehabilitated pipes shall be experienced with all aspects of the inspection process, including recognition of pipe defects and damage.

END OF SECTION

SECTION 02900

LANDSCAPING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide landscaping as required by the Contract Documents.
 - 1. Generally the Work consists of topsoiling, seeding and fertilizing all areas not covered by pavement or gravel, and where the property is disturbed by the construction work.
 - 2. Provide the specified quantity and size of plantings as shown of the Drawings.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to Sections in Division 1 of these Specifications.
 - 1. Section 02222 Earthwork for Water Distribution Systems

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

PART 2 MATERIALS

2.01 TOPSOIL

- A. Topsoil stripped from the site and stored, shall be approved before reuse.
 - 1. Topsoil from the site shall be treated to conform to the requirements for topsoil furnished from offsite sources.
 - 2. If the required quantity of suitable topsoil is not available from stripping of the site, or if it is not approved, topsoil from outside sources shall be furnished.
 - 3. Stockpiled topsoil used for this work shall be screened before being spread.
 - 4. Surplus topsoil not required to fulfill the requirements of the Contract shall be legally disposed of unless otherwise directed by the Owner.

2.02 TOPSOIL FURNISHED FROM OFFSITE SOURCES

- A. Topsoil shall be fertile, friable, typical of the locality, and obtained from a well-drained site.
 - 1. It shall be without admixture of subsoil or slag.
 - 2. Shall be screened.
 - 3. Topsoil as delivered to the site shall have an acidity range of pH 5.0 to 6.5 and shall contain not less than 5% organic matter as determined by loss on ignition of moisture-free samples dried at 100 degrees Centigrade.
 - 4. If required, limestone shall be added to the topsoil to adjust the pH, so that it complies with the required limits.
- B. Mechanical Analysis: Topsoil shall meet the following mechanical analysis

	% Passing	% Retained
1-1/4" screen	100	0
1/2" screen	97-100	0-3
No. 100 mesh sleeve	60-40	40-60

2.03 TREATING TOPSOIL WITH LIMESTONE OR ALUMINUM SULFATE

- A. When the hydrogen-ion value is below the specified level, add ground limestone at the rate of 2-1/2 lbs. per cubic yard of topsoil to raise pH one full point.
- B. The following table shows the amount of limestone needed for various soil reactions on the basis of 1,000 sq. ft. and on the basis of one (1) acre:

pH	pH Desired	Lbs. per 1000 sq. ft.	Tons per Acre
6.0	6.5	0-46	0-1
5.5	6.5	46-92	1-2
5.0	6.5	92-138	2-3

- 1. Limestone shall be raw, ground agricultural limestone containing not less than 90% calcium carbonate and shall be ground to such fineness that 50% will pass through a 100-mesh sieve and 90% will pass through a 20-mesh sieve.
- 2. When hydrogen-ion value is above specified level, add aluminum sulfate at the rate of 2-1/2 lbs. per cubic yard of topsoil to lower the pH one full point. Aluminum sulfate shall be unadulterated and delivered in containers with the name of the material, name of the manufacturer, and net weight of contents.

2.04 FERTILIZER

- A. Fertilizer shall be furnished in containers plainly marked with the chemical analysis of the product and showing one of the following compositions by weight.

	10-6-4	8-6-4	7-7-7
Nitrogen	10% min.	8% min.	7% min.
Available Phosphoric Acid	6% min.	6% min.	7% min.
Water Soluble Potash	4% min.	4% min.	7% min.

- 1. Fertilizer shall be stored so that when used it will be dry and free flowing.

2.05 SEED

- A. Seed shall be the commercial product of an approved reputable manufacturer and shall be certified to be not more than one (1) year old and of the general proportions by weight of the following seed types:

For Lawns and Other Undisturbed Areas Except as Defined Below:

Botanical Name	Common Name	Proportion by Weight	Minimum % Purity	Minimum % Germination
Poa Pratensis	Kentucky Blue Grass	35%	85%	85%
Festuca rubra var. creeping	Red Fescue	35%	98%	90%
Lolium Perene perennial	Rye Grass	15%	95%	90%
Agrostis Alba	Red Top	10%	92%	90%
Trifolium repens	White Clover	5%	90%	90%

For Cross Country Areas

Botanical Name	Common Name	Proportion by Weight	Minimum % Purity	Minimum % Germination
Colium Perene-perennial	Rye Grass	100%	95%	90%

1. Seed shall be furnished and delivered premixed in the proportions specified above.
2. All seed shall comply with State and Federal seed laws.
3. A certificate of compliance with the specifications shall be submitted by the manufacturer with the shipment of the seed. The certificate shall include the guaranteed percentage of purity, weed content and germination of the seed, net weight and date of shipment.
4. No seed shall be sown until the Contractor has submitted the above-mentioned certificate to the Engineer.

2.06 PLANTINGS

- A. Refer to Drawings for planting schedule.

PART 3 EXECUTION

3.01 APPLICATION

- A. Seedbed Preparation
 1. Grade areas to be seeded to a smooth uniform grade.
 2. Roll, scarify, rake and level as necessary to obtain true, even lawn surfaces.
 3. Meet existing grades.
 4. All lawn areas shall slope to drain.
 5. All finish grades shall meet approval before grass seed is sown.
- B. Application Rates of Limestone, Aluminum Sulfate, Fertilizer and Seed
 1. Limestone or Aluminum Sulfate shall be applied and thoroughly incorporated in the layer of loam or topsoil to adjust the acidity of the material.
 2. The rate of application of the limestone will be determined by the pH value.
 3. Fertilizer shall be applied at the rate of 20 pounds per 1000 square feet.
 4. The seed mixture shall be sown at the rate of 5 pounds per 1000 square feet.
- C. Fertilizing and Liming
 1. Fertilizing and liming shall be done when the soil is in a moist condition and at least 24 hours before the sowing of the seed.
 2. The fertilizer and lime shall be applied to the soil by means of a mechanical spreader or other approved method capable of maintaining a uniform rate of application.
 3. Thoroughly harrowed, raked or otherwise mixed with the soil to a depth of not less than 2 inches.
 4. The fertilizer and lime shall not be applied together.
- D. Time of Seeding
 1. The recommended seeding periods are from April 1 to June 1, and from August 15 to October 1.
 2. The Contractor may choose to seed at other times but regardless of the time of seeding he shall be responsible for a full growth of grass.
 3. When directed he shall re-fertilize and reseed areas on the project which do not develop a satisfactory growth of grass.
 4. Re-fertilizing and reseeding shall be incidental to the original seeding item requirements.

3.02 SEEDING METHODS

- A. Fertilizer, limestone, and mulch material, if required, and seed of the type specified may be placed by one of the following methods, provided an even distribution is obtained.
- B. Dry Method
 1. Power Equipment: Mechanical seeders, seed drills, landscape seeders, cultipacker seeders, fertilizer spreaders, or other approved mechanical seeding equipment or attachments may be used when seed, limestone, and fertilizer are to be applied in dry form.
 2. Manual Equipment - On areas that are inaccessible to power equipment, permission may be given to use hand-operated mechanical equipment when the materials applied are in dry form. The use of hand shovels to spread the materials shall not be allowed.
 3. When the dry method is used, limestone and fertilizer shall not be mixed together prior to their application, but shall be worked into the soil together to a depth of at least 2 inches.

4. At least 24 hours shall elapse between the time fertilizer is incorporated into the topsoil and seed is spread.
5. Areas covered with park seed shall be raked, and, rolled with a roller weighing not more than 100 pounds per foot of roller width to firm the soil but not to pack it. The rolling shall be done the same day as the seeding unless otherwise permitted.
6. Lawn areas constructed in the spring after April 15 shall be covered with a 1-inch loose layer of clean wheat or oat straw. The straw shall be kept wet until a catch of grass is established. Loose straw shall be removed from the site.
7. Grass on slopes or banks may be established by another method subject to approval. Special care shall be exercised to prevent erosion or washouts.

C. Hydraulic Method

1. The application of grass seed, fertilizer, limestone, and suitable mulch, if approved, may be accomplished through the use of an approved spraying machine.
2. The materials shall be mixed with water in the machine and kept in an agitated state in order for the materials to be uniformly suspended in the water.
3. The spraying equipment shall be so designed that when the solution is sprayed over an area, the resulting deposits of limestone, fertilizer, and grass seed shall be equal to the required rates.
4. Prior to the start of work, the Engineer shall be furnished with a certified statement for approval as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the hydroseeder.
5. The hydraulic seeding and fertilizing machine shall be completely flushed and cleaned each day before seeding is started.
6. If the results of the spray operations are unsatisfactory, the Contractor shall be required to abandon this method and apply the materials in accordance with the dry method.
7. When the hydraulic method is used, compaction or rolling shall be required.

3.03 MAINTENANCE

- A. The Contractor shall be responsible for the proper care of the seeded areas during the period when the grass is becoming established.
1. This period shall extend for two months after a successful uniform stand of grass is produced.
 2. The Contractor shall reseed all areas as necessary to obtain a uniform stand of grass, free from bare spots.
 3. Any seeded areas which fail to show a uniform stand of grass shall be reseeded until all areas are covered.
 4. Any and all additional seeding shall be at the Contractor's expense.
 5. If necessary, barricades of brush or other materials and suitable signs shall be placed to protect the seeded areas.
 6. The seeded areas shall be carefully and suitably watered as necessary to produce a satisfactory growth.
 7. Areas seeded shall be mowed whenever necessary to keep the growth between 3 inches and 4 inches.
 8. Any washout that occurs shall be regraded and reseeded at the Contractor's expense until a good sod is established.

3.04 PLANTINGS

- A. Planting installation shall be as follows:
1. Season for planting shall be as recommended by the nursery supplying the plantings.
 2. Do not plant in muddy or frozen ground.
 3. Field stake/layout plantings as shown on the DRAWINGS. CONTRACTOR shall notify the OWNER prior to installation for approval.
 4. Horizontal limit of topsoil shall extend 4 feet from the center of the plantings.
 5. Minimum depth of topsoil shall extend from the crown of the root ball to 6 inches below the root ball.
 6. Plant pits shall be two feet greater in diameter than the root ball and excavated with vertical sides. Plant pits shall not be backfilled until the ENGINEER has approved the installation.
 7. Plantings shall be set plumb and straight in the center of the pits. Crown of the plant shall be set at finished grades indicated on the DRAWINGS.
 8. The pits shall be backfilled to within eight inches of finished grade and then soaked in water and allowed to settle. Backfill shall consist of planting soil thoroughly mixed with fertilizer. Backfill to finished grade after settlement.

9. Mulch material shall be placed over entire planting to a depth of four inches after settlement, not later than one week after planting. No mulch shall be applied prior to the first watering of plant materials.

END OF SECTION

SECTION 02930

LOAM AND SEED

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide loam and seed as required by the Contract Documents.
 - 1. Generally the Work consists of topsoiling, seeding and fertilizing all disturbed areas of the water main easements.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02015 Test Pits
 - 2. Section 02222 Earthwork for Water Distribution Systems

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - 1. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.
- B. If the results of the hydraulic seeding operation (if utilized) are unsatisfactory, the method shall be abandoned and seeding shall be required by the sowing method.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- C. If hydroseeding application is to be used, a written description containing seed analysis, fertilizer and lime addition data is to be submitted for review of the Owner.

1.05 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01610.
- B. Immediately remove from the site, materials which are not true to name, and do not comply with the specified requirements, and promptly replace with materials meeting the specified requirements.

PART 2 MATERIALS

2.01 TOPSOIL

- A. Topsoil stripped from the site and stored, shall be approved before reuse.
 - 1. Topsoil from the site shall be treated to conform to the requirements for topsoil furnished from offsite sources.
 - 2. If the required quantity of suitable topsoil is not available from stripping of the site, or if it is not approved, topsoil from outside sources shall be furnished.
 - 3. Stockpiled topsoil used for this work shall be screened before being spread.
 - 4. Surplus topsoil not required to fulfill the requirements of the Contract shall be properly disposed of unless otherwise directed by the Owner.

2.02 TOPSOIL FURNISHED FROM OFFSITE SOURCES

- A. Topsoil shall be fertile, friable, natural topsoil typical of the locality, and obtained from a well-drained site.
 - 1. It shall be without admixture of subsoil or slag.
 - 2. Shall be screened.
 - 3. Topsoil as delivered to the site shall have an acidity range of pH 5.0 to 6.5 and shall contain not less than 5% organic matter as determined by loss on ignition of moisture-free samples dried at 100 degrees Centigrade.
 - 4. If required, limestone shall be added to the topsoil to adjust the pH, so that it complies with the required limits.
- B. Mechanical Analysis: Topsoil shall meet the following mechanical analysis

Size	% Passing	% Retained
1-1/4" screen	100	0
1/2" screen	97-100	0-3
No. 100 mesh sleeve	40-60	40-60

2.03 TREATING TOPSOIL WITH LIMESTONE OR ALUMINUM SULFATE

- A. When the hydrogen-ion value is below the specified level, add ground limestone at the rate of 2-1/2 lbs. per cubic yard of topsoil to raise pH one full point.
- B. The following table shows the amount of limestone needed for various soil reactions on the basis of 1,000 sq. ft. and on the basis of one (1) acre:

pH	pH Desired	Lbs. per 1000 sq. ft.	Tons per Acre
6.0	6.5	0-46	0-1
5.5	6.5	46-92	1-2
5.0	6.5	92-138	2-3

- 1. Limestone shall be raw, ground agricultural limestone containing not less than 90% calcium carbonate and shall be ground to such fineness that 50% will pass through a 100-mesh sieve and 90% will pass through a 20-mesh sieve.
- 2. When hydrogen-ion value is above specified level, add aluminum sulfate at the rate of 2-1/2 lbs. per cubic yard of topsoil to lower the pH one full point. Aluminum sulfate shall be unadulterated and delivered in containers with the name of the material, name of the manufacturer, and net weight of contents.

2.04 LIME

- A. Lime shall be ground limestone containing not less than 85 percent calcium and magnesium carbonates.
 - 1. Ground to such fineness that at least 50 percent will pass through a 100-mesh sieve and at least 90 percent shall pass through a 20-mesh sieve.

2.05 GRASS SEED

- A. General: Provide grass seed which is:
 - 1. Free from noxious weed seeds, and recleaned.
 - 2. Grade A recent crop seed.
 - 3. Treated with appropriate fungicide at time of mixing.
 - 4. Delivered to the site in sealed containers with dealers guaranteed analysis.
- B. Proportions by Weight (Level Areas):
 - 1. Chewing Fescue 60 percent.
 - 2. Red Top 10 percent.
 - 3. Annual Ryegrass 10 percent
 - 4. Kentucky Blue 20 percent.

- A. Proportions by Weight (Slopes):
1. Creeping Red Fescue 50 percent.
 2. Perennial Rye Grass 20 percent
 3. Red Clover 10 percent.
 4. Winter Rye 15 percent
 5. Ladino Clover 5 percent

Requirements:

1. Seed shall be furnished and delivered premixed in the proportions specified above.
2. All seed shall comply with State and Federal seed laws.
3. A certificate of compliance with the specifications shall be submitted by the manufacturer with the shipment of the seed. The certificate shall include the guaranteed percentage of purity, weed content and germination of the seed, net weight and date of shipment.
4. No seed shall be sown until the Contractor has submitted the above mentioned certificate to the Engineer.

2.06 FERTILIZER

- A. Fertilizer shall be furnished in containers plainly marked with the chemical analysis of the product and showing one of the following compositions by weight.

Constituent	10-6-4	8-6-4	7-7-7
Nitrogen	10% min.	8% min.	7% min.
Available Phosphoric Acid	6% min.	6% min.	7% min.
Water Soluble Potash	4% min.	4% min.	7% min.

1. Fertilizer shall be stored so that when used it will be dry and free flowing.

2.07 HYDRAULIC SPRAY MACHINE

- A. Shall be designed specifically for seed dissemination.
- B. Shall allow materials to be mixed with water in the machine and kept in an agitated state to keep materials uniformly suspended in the water.
- C. Shall be designed to provide equal quantities of required materials over a particular spraying area.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 APPLICATION

- A. Application of Topsoil
1. Topsoil shall be applied to the prepared subgrade specified in Section 02210, Site Grading.
 2. Topsoil shall be spread to a compacted depth of:
 - a. Four (4) inches for cross country areas.
 - b. Areas to have topsoil applied to them shall be scarified or otherwise roughened, just prior to the application.
- B. Seedbed Preparation
1. Grade areas to be seeded to a smooth uniform grade.
 2. Roll, scarify, rake and level as necessary to obtain true, even surfaces.
 3. Meet existing grades.
 4. All seeded areas shall slope to drain.
 5. All finish grades shall meet approval before grass seed is sown.

- C. Application Rates of Limestone, Aluminum Sulfate, Fertilizer and Seed
 1. Limestone or Aluminum Sulfate shall be applied and thoroughly incorporated in the layer of loam or topsoil to adjust the acidity of the material.
 2. The rate of application of the limestone will be determined by the pH value.
 3. Fertilizer shall be applied at the rate of 20 pounds per 1000 square feet.
 4. The seed mixture shall be sown at the rate of 5 pounds per 1000 square feet.

- D. Fertilizing and Liming
 1. Fertilizing and liming shall be done when the soil is in a moist condition and at least 24 hours before the sowing of the seed.
 2. The fertilizer and lime shall be applied to the soil by means of a mechanical spreader or other approved method capable of maintaining a uniform rate of application.
 3. Thoroughly harrowed, raked or otherwise mixed with the soil to a depth of not less than 2 inches.
 4. The fertilizer and lime shall not be applied together.

- E. Time of Seeding
 1. The recommended seeding periods are from April 1 to June 1 and from August 15 to October 1.
 2. The Contractor may choose to seed at other times but regardless of the time of seeding he shall be responsible for a full growth of grass.
 3. When directed he shall re-fertilize and reseed areas on the project which do not develop a satisfactory growth of grass.
 4. Re-fertilizing and reseeding shall be incidental to the original seeding item requirements.

3.03 SEEDING METHODS

- A. Fertilizer, limestone, and mulch material, if required, and seed of the type specified may be placed by one of the following methods, provided an even distribution is obtained.

- B. Dry Method
 1. Power Equipment: Mechanical seeders, seed drills, landscape seeders, cultipacker seeders, fertilizer spreaders, or other approved mechanical seeding equipment or attachments may be used when seed, limestone, and fertilizer are to be applied in dry form.
 2. Manual Equipment - On areas which are inaccessible to power equipment, permission may be given to use hand-operated mechanical equipment when the materials applied are in dry form. The use of hand shovels to spread the materials shall not be allowed.
 3. When the dry method is used, limestone and fertilizer shall not be mixed together prior to their application, but shall be worked into the soil together to a depth of at least 2 inches.
 4. At least 24 hours shall elapse between the time fertilizer is incorporated into the topsoil and seed is spread.
 5. Areas covered with park seed shall be raked, and, rolled with a roller weighing not more than 100 pounds per foot of roller width to firm the soil but not to pack it. The rolling shall be done the same day as the seeding unless otherwise permitted.
 6. Areas seeded in the spring after April 15 shall be covered with a 1-inch loose layer of clean wheat or oat straw. The straw shall be kept wet until a catch of grass is established. Loose straw shall be removed from the site.
 7. Grass on slopes or banks may be established by another method subject to approval. Special care shall be exercised to prevent erosion or washouts.

- C. Hydraulic Method
 1. The application of grass seed, fertilizer, limestone, and suitable mulch, if approved, may be accomplished through the use of an approved spraying machine.
 2. The materials shall be mixed with water in the machine and kept in an agitated state in order for the materials to be uniformly suspended in the water.
 3. The spraying equipment shall be so designed that when the solution is sprayed over an area, the resulting deposits of limestone, fertilizer, and grass seed shall be equal to the required rates.
 4. Prior to the start of work, the Engineer shall be furnished with a certified statement for approval as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the hydroseeder.
 5. The hydraulic seeding and fertilizing machine shall be completely flushed and cleaned each day before seeding is started.

6. If the results of the spray operations are unsatisfactory, the Contractor shall be required to abandon this method and apply the materials in accordance with the dry method.
7. When the hydraulic method is used, compaction or rolling shall be required.

D. Side Slopes Application

1. Roadway side slopes shall be seeded utilizing a hydraulic (hydro-seed) application process, to place seed and fertilizer simultaneously.
2. A color agent shall also be within the hydraulic mix.
3. Care shall be taken during the application to prevent coverage of poles, trees, signs, and etc.

3.04 MAINTENANCE

A. The Contractor shall be responsible for the proper care of the seeded areas during the period when the grass is becoming established.

1. This period shall extend for two months after a successful uniform stand of grass is produced.
2. The Contractor shall reseed all areas as necessary to obtain a uniform stand of grass, free from bare spots.
3. Any seeded areas which fail to show a uniform stand of grass shall be reseeded until all areas are covered
4. Any and all additional seeding shall be at the Contractor's expense.
5. If necessary, barricades of brush or other materials and suitable signs shall be placed to protect the seeded areas.
6. Any washout which occurs shall be regraded and reseeded at the Contractor's expense until a good sod is established.

3.05 GUARANTEE PERIOD

A. All seeded areas shall be guaranteed by the Contractor for not less than one (1) full year from the date of substantial completion.

END OF SECTION

SECTION 02950

TREE PROTECTION AND RESTORATION

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work under this Section consists of protecting, restoring and replacing trees affected by the work to be performed under this Contract.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02930 Loam and Seed

1.03 WARRANTY

- A. All plants, shrubs, trees and related work required under this Contract must be planted during the recommended time planting period and must satisfactorily grow and survive for a period of one year after acceptance.
- B. All plants shall be free of dead or dying branches and branch tips and have foliage of normal density, size, and color.
- C. Replace all dead plants and all plants not in vigorous, thriving condition during the entire guarantee period:
 - 1. Without cost to Owner.
 - 2. As soon as weather conditions permit.
 - 3. Within a specified planting period.
- D. Replacement plants under this guarantee shall be guaranteed for one full growing season from date of installation.
- E. Replacements shall closely match adjacent specimens of the species.
 - 1. All replacements shall be of the same kind and size.
 - 2. Replacements shall be furnished and planted and specified herein.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver more plant materials than can be planted in one day.
- B. Deliver plants with legible identification labels.
 - 1. Label trees, evergreens, bundles or containers of like shrubs, or ground cover plants.
 - 2. State correct plant name and size.
 - 3. Use durable waterproof labels with water resistant ink which will remain legible for at least 60 days.
- C. Protect during delivery to prevent damage to root ball or desiccation of leaves and wind burn.
 - 1. Plant balls shall be firmly bound, unbroken, reasonably moist to indicate watering prior to delivery and during storage.
 - 2. Tree trunks shall be free from fresh scars and damage in handling.
 - 3. No plant material from cold storage will be accepted.
- D. Do not drop plants.
- E. Do not pick up container plants by stems or trunks.
- F. All plants and materials are subject to inspection for approval on delivery to site.
 - 1. Any approval shall not impair the right of the Engineer to reject plant or material damaged due to Contractor's handling, storage or planting methods.
 - 2. Notify Engineer of plant and material delivery schedule at least 48 hours in advance so that it may be inspected upon arrival at the job site.
 - 3. Remove unacceptable plants and materials immediately from the job site at no cost to the Owner.

- G. Protect roots of plant material from drying or other possible injury.
- H. Store plants in shade and protect from weather.
 - 1. Maintain and protect plant material not to be planted within four hours.
- I. On delivery, set all balled and burlapped plants which cannot be planted immediately on ground and protect with soil, wet peat moss or other acceptable material.
 - 1. Water as required by weather conditions.

1.05 MAINTENANCE

- A. Planting maintenance shall begin immediately after planting and continue until the end of the guarantee period.
- B. Reset settled plants to proper grade and position, restore planting saucers and remove dead material.
- C. Replace impaired, dead or missing plants promptly during specified planting season.
- D. Keep planting saucers and beds free of weeds, grass and other undesired vegetation growth.
- E. Tighten and adjust guys as necessary.
- F. Water, weed, fertilize, cultivate, remulch, prune, spray, maintain and protect all plants to maintain a vigorous growing condition.
- G. Remove soil ridges from around watering basins prior to end of maintenance period.
- H. Following the completion of the maintenance period, the Contractor shall remove all wire, hoses, cables, guys and stakes from all trees which have been judged acceptable under guarantee provision.
 - 1. Unless designated otherwise by the Owner, all such materials used for temporary support of trees shall become the property of the Contractor and shall be removed from the site.

PART 2 MATERIALS

2.01 TREES AND SHRUBS

- A. Well-formed and shaped, true to type, and free from disease, injurious pests and defects such as knots, sun- scald, windburn, injuries, abrasion or disfigurement.
 - 1. Plants shall be in accordance with the ASNS Standards of the American Association of Nurserymen.
- B. True to botanical and common name and variety:
 - 1. American Joint Committee on Horticultural Nomenclature, Standardized Plant Names.
- C. Nursery grown except native pine, and approved collected stock:
 - 1. ANSI Z60.1 (latest edition).
 - 2. Grown within hardiness Zones 1 through 5, as established by the Arnold Arboretum, Jamaica Plain, Massachusetts, will be accepted.
 - a. The Contractor's supplier must certify in writing that the stock has actually been grown under Zone 5 or hardier conditions.
 - b. Plants not so certified will not be accepted.
- D. Root balled and burlapped plants:
 - 1. The root system of each plant shall be well provided with fibrous roots.
 - 2. All parts shall be moist and show active green cambium when cut.
 - 3. They shall be sound, healthy, and vigorous, well-branched and densely foliated when in leaf.
 - 4. The plants shall be free of disease, insect pests, eggs or larvae.
 - 5. Not root-bound or with root system hardened-off.
 - 6. Burlap shall be untreated eight ounce burlap. Plastic or other not-biodegradable wrappings will not be accepted.
 - 7. No plant will be accepted when the ball of earth its roots has been badly cracked or broken preparatory to or during the process of planting.
 - 8. The plants and balls shall remain intact during all operations.

9. All plants that cannot be planted at once must be heeled in by setting in the ground and covering the balls with soil and watering.
- E. Use only ground cover plants well-established in removable containers, integral containers, or formed homogeneous soil sections.
- F. Do not prune prior to delivery.
- G. Size and form of trees:
 1. Height of trees shall be not less than the minimum size designated.
 2. Caliper measurement for deciduous trees six inches above ground level up to and including four and twelve inches above ground level for larger sizes.
 3. Evergreen trees shall be to the specified height with spread in proportion to height as designated by the ASNS Standards.
 4. Evergreen trees shall be well branched to the ground.
 5. Each tree shall have a single trunk growing from a single un-mutilated crown of roots.
 6. No part of the trunk of any tree shall be conspicuously crooked as compared with normal trees of the same variety.
 7. The trunks of all trees shall be free from sunscald, frost cracks, or wounds resulting from abrasions, fire, or other causes.
- H. Size and form of shrubbery:
 1. Shrubby shall meet the requirements for spread or height stated in the plant list.
 2. Measurement for height shall be taken from the ground level to the average height of the shrub and not to the longest branch.
 3. Single stemmed or thin plants will not be accepted.
 4. The shrubs shall be well branched to the ground.
 5. The shrubs shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.

2.02 PLANTING SOIL MIX

- A. Planting soil mix shall be approved loam which has been pH adjusted according to particular planting applications and improved through the addition of organic matter as directed below. Planting loam shall conform to the following pH levels:
 1. For ericaceous plants and broad-leaved evergreens requiring an acid soil, planting loam shall have a true pH of 4.5 to 5.5. If it has not, it shall be amended by the Contractor at his own expense to the proper pH range by mixing with sulfur as specified herein.
 2. Planting loam for general planting of nonacid-loving plants shall have a true pH value of 6.0 to 6.5. If it has not, it shall be amended by the Contractor at his own expense to the proper pH range by mixing with dolomitic limestone as specified herein.
 3. The amount of either sulfur or limestone required to adjust the planting loam to the proper pH range (above) shall be approved by the Landscape Architect on the basis of soil tests as specified herein.
- B. Planting soil mix shall consist of pH adjusted loam which has been thoroughly premixed with organic material in the proportions of one (1) part peat moss with five (5) parts of approved loam.

2.03 FERTILIZER

- A. Non-acid loving:
 1. N: 10%
 2. P₂O₅: 6%
 3. K₂O: 4%
- B. Acid Loving:
 1. N: 7%
 2. P₂O₅: 7%
 3. K₂O: 7%

2.04 MULCH

- A. Bark Mulch:

1. Shredded or ground, fir, hemlock or pine, average 1 inch to 2 inches.
2. Uniform color, aged a minimum of 6 months and a maximum of two years.
3. Free from weed seeds, saw dust, splinters, stringy material and chunks of wood.

B. Wood Cellulose Fiber Mulch:

1. Mulch to cover hydroseeded areas shall be fiber processed from whole wood chips manufactured specifically for standard hydraulic mulching equipment.
 - a. Fiber shall not be produced from recycled material such as sawdust, paper, or cardboard.
2. Moisture content shall not exceed 10%, plus or minus 3% as defined by the pulp and paper industry standards.
 - a. Fiber shall have a water holding capacity of not less than 900 grams water per 100 grams fiber.
3. The mulch shall be of such character that the fiber will be dispersed into a uniform slurry when mixed with water.
 - a. It shall be nontoxic to plant life or animal life.
4. The mulch shall contain a non-petroleum based organic tackifier and a green dye to allow for easy visual metering during application but shall be non-injurious to plant growth.

2.05 GUYS AND STAKES

A. Stakes for tree support:

1. Construction grade lumber
2. Minimum nominal size: 2"x2" or 2-1/2" in diameter x 9' long and pointed at 1 end, stained dark brown.

B. Guying wire shall be minimum two strands of twisted new pliable annealed galvanized soft steel wire of No. ten gauge size.

1. Hose for guying wire: New two ply reinforced rubber garden hose not less than one-half inch inside diameter. Color shall be black.
2. Turnbuckles and eyebolts; Galvanized steel of size and gauge to provide tensile strength equal to that of the cable. Turnbuckle opening shall be a minimum of three inches.

C. Drive anchors and guy wire assembly shall be as manufactured by Laconia Malleable Iron Works, Laconia, New Hampshire, or 'Duckbill' tree anchoring system manufactured by Foresight Industries, Inc., Cheyenne, Wyoming, or 'Ground Gripper' anchors as manufactured by A.B. Chance Co., Centralia, MO, or equal. Sizes used shall be in accordance with the manufacturer's specifications and recommendations.

D. Safety flagging for diagonal guy wires shall consist of twelve inch (12") lengths of wooden one by threes, (1x3) nominal dimension, painted with two coats of white enamel paint and fastened to guy wires with screw eyes, galvanized staples or other suitable hardware.

2.06 ANTI-DESICCANT

A. Acceptable emulsion shall be permeable to transpiration and shall be tested in accordance with ASTM E96.

1. Anti-desiccant shall be "Wilt-Pruf" or approved equal.

PART 3 EXECUTION

3.01 TREE PROTECTION

A. Priority shall be given to protect the trees 12 inches in diameter and larger.

1. The removal of trees shall be allowed only when they impede construction.

B. Tie back branches or trees designated for protection.

1. Do not scar bark or break branches.
2. Remove twine immediately upon completion of operations in the vicinity.

C. SDR35 PVC Pipe or Trex Plastic shall be provided, without nails, around designated trees to prevent scarring of the trees from construction equipment.

1. Trex Plastic shall be 2"x4"x8' in size.

D. Edge of excavation shall be a minimum of eight feet from the trunk of a tree that is to be protected.

1. Trees in proximity to excavation shall be pruned prior to construction to compensate for anticipated root loss and stress.

2. Pruning shall be done in accordance with Paragraph 3.02 of this specification.
- E. The Contractor shall use a saw to cut roots greater than one inch, but less than three inches in diameter.
 1. Roots larger than three inches in diameter shall not be cut and may require hand digging to prevent damage.
- F. No equipment or stockpiles shall be permitted within the drip-line of trees to be protected to avoid compaction of feeder roots (concentrated within the top six to eight inches of soil).
 1. Flag limits of vehicle traffic and stockpiles to minimize excess disturbance.
- G. Traffic over roots by heavy construction vehicles shall be minimized.
- H. Engineer shall observe protective measures prior to Contractor commencing any other construction operations in the vicinity.
- I. Whenever tree roots will be exposed during construction for longer than three days, they shall be covered with a three-inch layer of mulch and kept moist.

3.02 TREE RESTORATION

- A. Pruning: The Engineer shall determine, with the assistance of a certified arborist as necessary, whether sufficient structural root mass remains after construction root cutting to assure the survival of the tree.
 1. If not, the tree shall be removed at no additional cost to the Owner.
 2. Trees whose roots were pruned during construction, but shall remain, shall have their tree crowns pruned to balance root loss.
- B. Wound Repair: When wounds are inflicted on any tree within or outside of construction or permanent easements, the loose bark shall be removed by cutting the bark back to healthy tissue with a sharp knife, tracing the outline of the wound.
 1. Wound tracing shall be supervised by a certified arborist, as determined by the Engineer.
- C. Watering: Additional watering during periods of subnormal rainfall shall be applied at a rate equivalent to one inch per week.
 1. Water shall be non-toxic and free of harmful substances.
- D. Replacement: In the event that trees to be protected cannot be saved as intended by the measures outlined in Part 3 of this specification, the tree shall be cleared.
 1. One tree shall be replaced for every 2-inch caliper of damaged or destroyed tree, at no additional cost to the Owner.
 2. A tree of similar species, 2-1/2 to 3-inch caliper shall be provided and planted as specified below.

3.03 TREE REPLACEMENT

- A. In the event that trees to be protected cannot be saved as intended by the measures outlined in this specification, the tree shall be cleared.
 1. One tree for every 2 inches of caliper of damaged tree shall be replaced at no additional cost to the Owner.
 2. The tree shall be of similar species and planted at a location determined by the Engineer.
- B. Planting Periods
 1. Deciduous Trees and Shrubs:
 - a. March 21 through May 1
 - b. October 1 through December 1
 2. Evergreen Trees and Shrubs:
 - a. April 15 through June 1
 - b. August 15 through October 15
- C. Plant Pits
 1. Tree pits shall be at least two feet greater in diameter than the spread of the root ball and at least six inches deeper.
 2. All pits shall be sharp and circular in outline and shall have vertical sides.

- a. Excavated materials of a subsoil classification or containing extraneous matter shall be removed from the site by the Contractor on a daily basis.
 - 3. Test drainage of plant pits shall by filling with water.
 - a. If water does not drain out within six hours, dig through impervious layers to a depth where drainage is adequate and backfill with sandy gravel material to proper pit depth.
- D. Plants shall be placed at the proper depth, plumb and turned as directed in the pits.
 - 1. The pits shall be backfilled to within eight inches of finished grade and then soaked in water and allowed to settle.
 - 2. Backfilling shall consist of planting soil thoroughly mixed with fertilizer.
- E. Plant when weather and soil conditions are suitable and in accordance with local practice.
- F. The depth of planting pits shall be adjusted to provide a minimum of six (6) inches of compacted planting soil backfill under the balls or roots of all plants.
- G. Remove top one-third of burlap, rope, wires, etc. from sides and tops of balls; do not pull burlap out from under.
 - 1. Synthetic man-made wrapping material, such as polypropylene or other similar materials, shall be completely removed.
- H. Backfill remainder of plant pits with planting soil and firmly tamp around plant ball.
- I. Place weed control barrier over planting pits and beds.
- J. Mulch material shall be placed over entire saucer areas of trees to a depth of two inches after settlement, not later than one week after planting.
 - 1. No mulch shall be applied prior to the first watering of plant materials.
 - 2. Provide temporary raised earthen saucers surrounding tree.
- K. Watering shall be done by flooding plants twice within the first twenty-four hours of the time of planting.
- L. Wrapping shall be completed promptly after planting.
 - 1. The trunks of trees shall be spirally wrapped to the height of the second branches or as directed.
 - 2. Wrapping shall be taped securely in place.
- M. Guys shall be placed around the trunk at a point higher than the lowest branches of the trees in such a manner that branches will not be subject to undue strain.
 - 1. Wires shall not come into direct contact with the bark of the tree in any place, but shall be covered with pieces of black rubber garden hose at points of contact.
 - 2. Guys shall be kept tight at all times.
 - 3. Bright orange flagging tape shall be tied to guys at chest height in areas subject to pedestrian traffic.
- N. Pruning shall be done as specified in Paragraph 3.02 (A), but only under the direction of the Engineer.
 - 1. Any pruning done without his direction shall be cause for replacement of the plant.
 - 2. All newly planted trees and shrubs shall be pruned in accordance with National Park Service "Shade Tree Pruning," Tree Preservation Bulletin No. 4, and American Association of Nurserymen Standards to preserve the natural character of the plant.
- O. Apply anti-desiccant to all plants in accordance with manufacturer's recommendations.
- P. The Contractor shall make good to the satisfaction of the Owner any damage to lawn areas, plants, walks, walls or any other property.
- Q. After completion of the work, the Contractor shall remove all debris materials, rubbish, etc. from the site and legally dispose of them.
 - 1. The premises shall be left clean, presentable and satisfactory.

END OF SECTION

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DIVISION 3 CONCRETE

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SECTION 03301

CAST-IN-PLACE CONCRETE FOR WATER MAINS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide cast-in-place concrete as required by the Contract Documents.
 - 1. In general the Contractor shall furnish all labor, materials, equipment and incidentals necessary to do all concrete work required for thrust blocking, permanent trench patch and other miscellaneous items.

1.02 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02222 Earthwork for Water Distribution Systems
 - 2. Section 02611 Ductile Iron Pipe and Fittings
 - 3. Section 02650 Thrust Blocks and Joint Restraints

PART 2 PRODUCTS

2.01 CEMENT

- A. Cement shall be domestic Portland cement conforming to ASTM Designation C150, Type II.

2.02 AGGREGATES

- A. General
 - 1. Provide hard rock aggregate complying with ASTM C33, with additional attributes as specified in this Section.
- B. Fine Aggregates
 - 1. Shall consist of washed inert natural sand conforming to the requirements of ASTM Specification C33, and the following detailed requirements.

<u>Sieve Size</u>	<u>Percent Retained</u>
No. 4	0-5
No. 16	25-40
No. 50	70-87
No. 100	93-97

- C. Coarse Aggregates
 - 1. Provide coarse aggregate consisting of clean, hard, fine grained, sound crushed rock or washed gravel, conforming to the requirements of ASTM Specification C33.
 - 2. Use aggregates of the largest practicable size for each condition of placement, subject to the following maximum size limitations.
 - a. 2-inch for plain concrete.
 - b. 1-inch for reinforced sections ten (10) inches and over in thickness.
 - c. 3/4-inch for reinforced sections less than ten (10) inches in thickness.
 - 3. Grade combined aggregates within the following limits:

Percentage by Weight Passing Sieve

Sieve Size (Size in Inches)	1-1/2" Aggregate		1" Aggregate		3/4" Aggregate	
	<u>Min.</u>	<u>Max.</u>	<u>Min.</u>	<u>Max.</u>	<u>Min.</u>	<u>Max.</u>
1-1/2"	95	----	----	----	----	----
1"	75	90	90	100	----	----
3/4"	55	77	70	90	90	100
3/8"	40	55	45	65	60	80
No. 4	30	40	31	47	40	60
No. 8	22	35	23	40	30	45
No. 30	10	20	10	23	13	23
No. 50	2	8	2	10	5	15
No. 100	0	3	0	3	0	5

2.03 WATER

- A. Use only water which is clean and free from deleterious amounts of acid, alkali, salt and organic matter.

2.04 ADMIXTURES

- A. Use only a standard brand of admixture for concrete, meeting or exceeding ASTM Specification C494.
 - 1. All concrete which is exposed to the elements shall be air entrained.
 - 2. The volume of air entrainment shall not exceed five (5) percent.

PART 3 EXECUTION

3.01 CONCRETE MIXING

- A. Class A Concrete
 - 1. Class A concrete shall have a minimum compressive strength, at 28 days, of 3,000 psi, with a maximum water content of 6.4 gal./100 lbs. and a minimum cement content of 520 lbs./cu. yd.
- B. Class B Concrete
 - 1. Class B concrete shall have a minimum compressive strength at 28 days of 2,500 psi, with a maximum water content of 7.4 gal./100 lbs. and a minimum cement content of 430 lbs./cu. yd.
 - 2. Class B concrete may be mixed on site using a 1: 2.5: 5 mix and made with not less than 4.5 bags of cement per cubic yard.
- C. Ready Mix Concrete
 - 1. Ready mix concrete shall comply with ASTM C94.
- D. Concrete Admixtures
 - 1. Air entrainment shall be from 3 to 5 percent.

3.02 PLACEMENT OF CONCRETE

- A. Concrete shall be carefully placed to ensure dense, compact concrete.
 - 1. Thoroughly spaded or vibrated into position without disturbance of pipe lines or other materials.
 - 2. Placed with as little slump as practicable.
 - 3. Pipe shall be securely braced, both vertically and horizontally, if it is to be encased, to prevent flotation.
 - 4. The sides of thrust blocks shall be formed.
 - 5. Concrete shall not be placed over bolts or nuts so as to prevent the removal of the joint gland.
 - 6. Backfill shall not be placed on the concrete until the concrete has set firm.
 - 7. Concrete shall not be placed in water or submerged within 24 hours after placing, nor shall running water be permitted to flow over the surface of fresh concrete within four days after its placing.

END OF SECTION

ATTACHMENT A - TRENCH PERMIT
(4 PAGES)

FAMILIAR WITH, ALL LAWS AND REGULATIONS APPLICABLE TO WORK PROPOSED, INCLUDING OSHA REGULATIONS, G.L. c. 82A, 520 CMR 7.00 et seq., AND ANY APPLICABLE MUNICIPAL ORDINANCES, BY-LAWS AND REGULATIONS AND THEY COVENANT AND AGREE THAT ALL WORK DONE UNDER THE PERMIT ISSUED FOR SUCH WORK WILL COMPLY THEREWITH IN ALL RESPECTS AND WITH THE CONDITIONS SET FORTH BELOW.

THE UNDERSIGNED OWNER AUTHORIZES THE APPLICANT TO APPLY FOR THE PERMIT AND THE EXCAVATOR TO UNDERTAKE SUCH WORK ON THE PROPERTY OF THE OWNER, AND ALSO, FOR THE DURATION OF CONSTRUCTION, AUTHORIZES PERSONS DULY APPOINTED BY THE MUNICIPALITY TO ENTER UPON THE PROPERTY TO MONITOR AND INSPECT THE WORK FOR CONFORMITY WITH THE CONDITIONS ATTACHED HERETO AND THE LAWS AND REGULATIONS GOVERING SUCH WORK.

THE UNDERSIGNED APPLICANT, OWNER AND EXCAVATOR AGREE JOINTLY AND SEVERALLY TO REIMBURSE THE MUNICIPALITY FOR ANY AND ALL COSTS AND EXPENSES INCURRED BY THE MUNICIPALITY IN CONNECTION WITH THIS PERMIT AND THE WORK CONDUCTED THEREUNDER, INCLUDING BUT NOT LIMITED TO ENFORCING THE REQUIREMENTS OF STATE LAW AND CONDITIONS OF THIS PERMIT, INSPECTIONS MADE TO ASSURE COMPLIANCE THEREWITH, AND MEASURES TAKEN BY THE MUNICIPALITY TO PROTECT THE PUBLIC WHERE THE APPLICANT OWNER OR EXCAVATOR HAS FAILED TO COMPLY THEREWITH INCLUDING POLICE DETAILS AND OTHER REMEDIAL MEASURES DEEMED NECESSARY BY THE MUNICIPALITY.

THE UNDERSIGNED APPLICANT, OWNER AND EXCAVATOR AGREE JOINTLY AND SEVERALLY TO DEFEND, INDEMNIFY, AND HOLD HARMLESS THE MUNICIPALITY AND ALL OF ITS AGENTS AND EMPLOYEES FROM ANY AND ALL LIABILITY, CAUSES OR ACTION, COSTS, AND EXPENSES RESULTING FROM OR ARISING OUT OF ANY INJURY, DEATH, LOSS, OR DAMAGE TO ANY PERSON OR PROPERTY DURING THE WORK CONDUCTED UNDER THIS PERMIT.

APPLICANT SIGNATURE

_____ DATE _____

EXCAVATOR SIGNATURE (IF DIFFERENT)

_____ DATE _____

OWNER'S SIGNATURE (IF DIFFERENT)

_____ DATE: _____

For City/Town use -- Do not write in this section	
PERMIT APPROVED BY	\$ _____ Application Fee
PERMITTING AUTHORITY	
CONDITIONS OF APPROVAL	

CONDITIONS AND REQUIREMENTS PURSUANT TO G.L.C.82A AND 520 CMR 7.00 et seq. (as amended)

By signing the application, the applicant understands and agrees to comply with the following:

- i. No trench may be excavated unless the requirements of sections 40 through 40D of chapter 82, and any accompanying regulations, have been met and this permit is invalid unless and until said requirements have been complied with by the excavator applying for the permit including, but not limited to, the establishment of a valid excavation number with the underground plant damage prevention system as said system is defined in section 76D of chapter 164 (DIG SAFE);
- ii. Trenches may pose a significant health and safety hazard. Pursuant to Section 1 of Chapter 82 of the General Laws, an excavator shall not leave any open trench unattended without first making every reasonable effort to eliminate any recognized safety hazard that may exist as a result of leaving said open trench unattended. Excavators should consult regulations promulgated by the Department of Public Safety in order to familiarize themselves with the recognized safety hazards associated with excavations and open trenches and the procedures required or recommended by said department in order to make every reasonable effort to eliminate said safety hazards which may include covering, barricading or otherwise protecting open trenches from accidental entry.
- iii. Persons engaging in any in any trenching operation shall familiarize themselves with the federal safety standards promulgated by the Occupational Safety and Health Administration on excavations: 29 CFR 1926.650 et seq., entitled Subpart P “Excavations”.
- iv. Excavators engaging in any trenching operation who utilize hoisting or other mechanical equipment subject to chapter 146 shall only employ individuals licensed to operate said equipment by the Department of Public Safety pursuant to said chapter and this permit must be presented to said licensed operator before any excavation is commenced;
- v. By applying for, accepting and signing this permit, the applicant hereby attests to the following: (1) that they have read and understands the regulations promulgated by the Department of Public Safety with regard to construction related excavations and trench safety; (2) that he has read and understands the federal safety standards promulgated by the Occupational Safety and Health Administration on excavations: 29 CMR 1926.650 et seq., entitled Subpart P “Excavations” as well as any other excavation requirements established by this municipality; and (3) that he is aware of and has, with regard to the proposed trench excavation on private property or proposed excavation of a city or town public way that forms the basis of the permit application, complied with the requirements of sections 40-40D of chapter 82A.
- vi. This permit shall be posted in plain view on the site of the trench.

Summary of Excavation and Trench Safety Regulation (520 CMR 14.00 et seq.)

This summary was prepared by the Massachusetts Department of Public Safety pursuant to G.L.c.82A and does not include all requirements of the 520 CMR 14.00. To view the full regulation and G.L.c.82A, go to www.mass.gov/dps. Pursuant to M.G.L. c. 82, § 1, the Department of Public Safety, jointly with the Division of Occupational Safety, drafted regulations relative to trench safety. The regulation is codified in section 14.00 of title 520 of the Code of Massachusetts Regulations. The regulation requires all excavators to obtain a permit prior to the excavation of a trench made for a construction-related purpose on public or private land or rights-of-way. All municipalities must establish a local permitting authority for the purpose of issuing permits for trenches within their municipality. Trenches on land owned or controlled by a public (state) agency requires a permit to be issued by that public agency unless otherwise designated.

In addition to the permitting requirements mandated by statute, the trench safety regulations require that all excavators, whether public or private, take specific precautions to protect the general public and prevent unauthorized access to unattended trenches. Accordingly, unattended trenches must be covered, barricaded or backfilled. Covers must be road plates at least ¾” thick or equivalent; barricades must be fences at least 6’ high with no openings greater than 4” between vertical supports; backfilling must be sufficient to eliminate the trench. Alternatively, excavators may choose to attend trenches at all times, for instance by hiring a police detail, security guard or other attendant who will be present during times when the trench will be unattended by the excavator.

The regulations further provide that local permitting authorities, the Department of Public Safety, or the Division of Occupational Safety may order an immediate shutdown of a trench in the event of a death or serious injury; the failure to obtain a permit; or the failure to implement or effectively use adequate protections for the general public. The trench shall remain shut down until re-inspected and authorized to re-open provided, however, that excavators shall have the right to appeal an immediate shutdown. Permitting authorities are further authorized to suspend or revoke a permit following a hearing. Excavators may also be subject to administrative fines issued by the Department of Public Safety for identified violations.

For additional information please visit the Department of Public Safety’s website at www.mass.gov/dps

Summary of 1926 CFR Subpart P -OSHA Excavation Standard

This is a worker protection standard, and is designed to protect employees who are working inside a trench. This summary was prepared by the Massachusetts Division of Occupational Safety and not OSHA for informational purposes only and does not constitute an official interpretation by OSHA of their regulations, and may not include all aspects of the standard. For further information or a full copy of the standard go to www.osha.gov.

Trench Definition per the OSHA standard:

- An excavation made below the surface of the ground, narrow in relation to its length.
- In general, the depth is greater than the width, but the width of the trench is not greater than fifteen feet.

Protective Systems to prevent soil wall collapse are always required in trenches deeper than 5', and are also required in trenches less than 5' deep when the competent person determines that a hazard exists. Protection options include:

- Shoring. Shoring must be used in accordance with the OSHA Excavation standard appendices, the equipment manufacturer's tabulated data, or designed by a registered professional engineer.
- Shielding (Trench Boxes). Trench boxes must be used in accordance with the equipment manufacturer's tabulated data, or a registered professional engineer.
- Sloping or Benching. In Type C soils (what is most typically encountered) the excavation must extend horizontally 1 ½ feet for every foot of trench depth on both sides, 1 foot for Type B soils, and ¾ foot for Type A soils.
- A registered professional engineer must design protective systems for all excavations greater than 20' in depth.
- **Ladders** must be used in trenches deeper than 4'.
- Ladders must be inside the trench with workers at all times, and located within 25' of unobstructed lateral travel for every worker in the trench.
- Ladders must extend 3' above the top of the trench so workers can safely get onto and off of the ladder.

Inspections of every trench worksite are required:

- Prior to the start of each shift, and again when there is a change in conditions such as a rainstorm.
- Inspections must be conducted by the competent person (see below).

Competent Person(s) is:

- Capable (i.e., trained and knowledgeable) in identifying existing and predictable hazards in the trench, and other working conditions which may pose a hazard to workers, and
- Authorized by management to take necessary corrective action to eliminate the hazards. Employees must be removed from hazardous areas until the hazard has been corrected.

Underground Utilities must be:

- Identified prior to opening the excavation (e.g., contact Digsafe).
- Located by safe and acceptable means while excavating.
- Protected, supported, or removed once exposed.

Spoils must be kept back a minimum of 2' from the edge of the trench.

Surface Encumbrances creating a hazard must be removed or supported to safeguard employees. Keep heavy equipment and heavy material as far back from the edge of the trench as possible.

Stability of Adjacent Structures:

- Where the stability of adjacent structures is endangered by creation of the trench, they must be underpinned, braced, or otherwise supported.
- Sidewalks, pavements, etc. shall not be undermined unless a support system or other method of protection is provided.

Protection from water accumulation hazards:

- It is not allowable for employees to work in trenches with accumulated water. If water control such as pumping is used to prevent water accumulation, this must be monitored by the competent person.
- If the trench interrupts natural drainage of surface water, ditches, dikes or other means must be used to prevent this water from entering the excavation.

Additional Requirements:

- For mobile equipment operated near the edge of the trench, a warning system such as barricades or stop logs must be used.
- Employees are not permitted to work underneath loads. Operators may not remain in vehicles being loaded unless vehicles are equipped with adequate protection as per 1926.601(b)(6).
- Employees must wear high-visibility clothing in traffic work zones.
- Air monitoring must be conducted in trenches deeper than 4' if the potential for a hazardous atmosphere exists. If a hazardous atmosphere is found to exist (e.g., O₂ <19.5% or >23.5%, 20% LEL, specific chemical hazard), adequate protections shall be taken such as ventilation of the space.
- Walkways are required where employees must cross over the trench. Walkways with guardrails must be provided for crossing over trenches > 6' deep.
- Employees must be protected from loose rock or soil through protections such as scaling or protective barricades.

ATTACHMENT B – PRICE ADJUSTMENTS

(2 PAGES)

SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES

Item 84 of the Bid Item Sheets carries an allowance for Hot Mix Asphalt Mixtures (HMA). This provision applies to all HMA used under this the contract for this project.

SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE

Item 85 of the Bid Item Sheets carries an allowance for Fuel. The fuel price adjustment is inserted in this contract because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the City, depending on an increase or decrease in the average price of diesel fuel or gasoline.

CITY OF NEWTON, MASSACHUSETTS

CHESTNUT STREET PHASE II WATER MAIN CLEANING AND LINING

BID NO. 21-61
PLAN NO. N-84-38956



LOCATION PLAN
NO SCALE



TATA & HOWARD

SHEET INDEX

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- C-2 - CHESTNUT STREET STA. 0+00 TO STA. 17+08
- C-3 - CHESTNUT STREET STA. 17+08 TO STA. 29+05
- C-4 - DETAILS
- C-5 - ADDITIONAL GIS INFORMATION AND ATLAS MAPS



NEWTON CITY HALL
1000 COMMONWEALTH AVENUE
NEWTON CENTRE, MA 02459



GENERAL PROCESS AND CONSTRUCTION NOTES:

- THE LOCATION OF THE EXISTING UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE INTENDED ONLY TO ADVISE THE CONTRACTOR OF THEIR PRESENCE. ALL GAS SERVICES ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE ACTUAL LOCATIONS OF ALL EXISTING UTILITIES, INCLUDING SERVICES. CALL "DIG SAFE" (1-888-344-7233) FOR FIELD LOCATIONS OF ALL EXISTING UTILITIES. CONTRACTOR SHALL NOT OCCUPY ANY AREAS) UNTIL THE "DIG SAFE" AUTHORIZATION DATE HAS BEEN ATTAINED. IN ADDITION, THE CONTRACTOR SHALL OBTAIN THE CITY OF NEWTON FOR WATER, SEWER, AND DRAIN LINE LOCATIONS.
- ALL BENDS, TEES, CAPS AND HYDRANTS SHALL BE BACKED WITH CONCRETE THRUST BLOCKS AS INDICATED IN THE CONTRACT DRAWINGS. MEGALUGS ARE TO BE INSTALLED ON ALL BENDS, VALVES AND TEES.
- THE CONTRACTOR SHALL MAKE EVERY EFFORT NOT TO DISTURB THE EXISTING WATER SYSTEM OUTSIDE THE PROJECT AREA. NO ADDITIONAL PAYMENT SHALL BE MADE FOR DAMAGE CREATED AT THE CONVENIENCE OF THE CONTRACTOR.
- UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER, THE NEW WATER MAIN SHALL PASS UNDER THE EXISTING UTILITIES, DRAIN LINES, EXISTING WATER MAINS AND HYDRANTS.
- THE CONTRACTOR SHALL MAINTAIN A MINIMUM CLEARANCE BETWEEN THE NEW WATER MAIN AND OTHER EXISTING UTILITIES OF AT LEAST 18-INCHES. ANY WATER MAIN OR SERVICE WITHIN 10 FEET HORIZONTALLY AND 18 INCHES VERTICALLY OF A SEWER LINE OR STRUCTURE SHALL BE ENCASED IN CONCRETE.
- ALL WATER PIPES ARE TO BE LAID WITH A MINIMUM OF 5'-0" COVER, EXCEPT AS INDICATED OTHERWISE IN THE CONTRACT DRAWINGS.
- NEW WATER MAINS MUST PASS A CHLORINATION TEST AND A PRESSURE TEST BEFORE WATER SERVICES ARE TIED OVER.
- THE CONTRACTOR AT HIS EXPENSE SHALL PROVIDE ADDITIONAL TAPS AS NECESSARY FOR THE CHLORINATING AND HYDROSTATIC TESTING. TAPS SHALL BE CLOSED OR PLUGGED AFTER TESTING IS COMPLETE.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF NEWTON. ALL EXCAVATION AND RESTORATION SHALL MEET CITY SPECIFICATIONS. A CITY STREET OPENING PERMIT AND TRENCH OPENING PERMIT (APPLICATION FEES WAIVED) WILL BE REQUIRED FOR ALL STREETS WITHIN THE PROJECT AREA PRIOR TO ANY CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL REQUIREMENTS OF THE ABOVE MENTIONED PERMITS. PURSUANT TO M.G.L. CHAPTER 82A-1; 520 CMR 7.00 AND 520 CMR 14.00, ALSO IN ACCORDANCE WITH SUMMARY OF 1926 SUBPART P - OSHA EXCAVATION STANDARD THE CONTRACTOR IS RESPONSIBLE FOR THE FILING OF AND FULLY MEETING THE CONDITIONS OF THE NEWLY ADOPTED TRENCH PERMIT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PAVEMENT MARKINGS, TRAFFIC SIGN LOOPS, STRIPING, ARROWS, CROSSWALKS, ETC.
- IN ACCORDANCE WITH THE CONTRACT DRAWINGS, NEW SERVICES ARE SHOWN ON PLANS NEXT TO EXISTING SERVICES FOR CLARITY. NEW SERVICES ARE TO BE INSTALLED IN EXISTING WATER SERVICE TRENCH, UNLESS OTHERWISE APPROVED BY THE ENGINEER. ALL ABANDONED SERVICES ARE TO BE SHUT OFF AT THE CORPORATION AT THE TIME OF THE NEW TIE OVER.
- ALL VALVES ON ABANDONED WATER MAINS SHALL BE CLOSED, VALVE BOXES REMOVED, AND BACKFILLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- REMOVE EXISTING HYDRANTS AS INDICATED ON THE DRAWINGS AND CAP BRANCH WHEN NEW WATER MAINS ARE IN SERVICE UNLESS OTHERWISE NOTED. DELIVER UP TO FOUR (4) REMOVED HYDRANTS TO CITY OF NEWTON STOCK YARD AT 60 ELLIOT STREET.
- CONTRACTOR SHALL USE A WATER TIGHT METHOD DURING THE WATER MAIN INSTALLATION. PLUGS SHALL REMAIN IN PLACE AT ALL TIMES.
- CONTRACTOR IS REQUIRED TO SUBMIT A COMPACTION REPORT AS SPECIFIED IN THE SPECIFICATIONS (SECTION 0222).
- AS APPROPRIATE, CONTRACTOR TO TAKE ALL NECESSARY MEASURES, INCLUDING HAND DIGGING, TO MAINTAIN THE INTEGRITY OF THE EXISTING DRAINAGE PIPES.
- LOCATION OF EXISTING DRAINAGE IS APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD. CONTRACTOR SHALL VERIFY SIZE AND DEPTH OF ALL DRAIN LINES.
- THE CONTRACTOR IS REQUIRED TO PROVIDE A SUPERINTENDENT OR OPERATIONS, A QUALIFIED INDIVIDUAL WHO WILL BE ON-SITE AT ALL TIMES TO ADDRESS THE CRITICAL NEEDS OF THE PROJECT. IN ADDITION, A 7 DAY/24 HOUR CELL PHONE MUST BE LISTED WITH THE CITY TO RESPOND TO ALL PROJECT BUSINESS AND/OR EMERGENCY CALLS WITHIN ONE-HOUR.
- FOR FURTHER UTILITY SUPPORT AND EMERGENCY RESPONSE REQUESTS, THE CONTRACTOR IS ADVISED TO CONTACT: EVERSOURCE, NATIONAL GRID, VERIZON, NEWTON WATER, NEWTON SEWER & DRAIN.
- ANY UTILITY RELOCATIONS, AND/OR UTILITY ISSUES, ARE TO BE DIRECTLY ADDRESSED AND COORDINATED BY THE CONTRACTOR WITH THE RESPECTIVE UTILITY COMPANY. FURTHER, IN THE EVENT CERTAIN AGED GAS MAINS AND/OR SERVICES ARE TARGETED TO BE RENEWED THEN THE CONTRACTOR SHALL PROVIDE A WRITTEN NOTICE TO THE UTILITY COMPANY.
- ALL EXCESS EXCAVATED MATERIAL AND/OR WASTE MATERIALS OF ANY TYPE OR MATERIAL ARE TO BE DISPOSED OF AT A LEGAL DUMPING SITE AT THE CONTRACTORS OWN EXPENSE. NO DISPOSAL SITE SHALL BE PROVIDED BY THE CITY.
- ALL DEBRIS IS TO BE REMOVED FROM THE SITE ON A DAILY BASIS. HOWEVER, IF SITE CONSTRAINTS ARE NOT AN ISSUE THEN THE CONTRACTOR CAN MAINTAIN A LOCKED LID DUMPSTER AT THE DISCRETION OF THE ENGINEER AND BY PERMIT ONLY AT NO ADDITIONAL EXPENSE TO THE OWNER.
- ALL RESIDUAL MATERIAL IS TO BE HAND BROOMED FROM THE ROADWAY AT THE END OF EACH DAYS OPERATION AND EVERY MEASURE TAKEN TO MINIMIZE DUST, INCLUSIVE OF CHEMICAL TREATMENT AND/OR WATER APPLICATION AS DIRECTED BY THE ENGINEER.
- STAGING AND STOCKPILING SITES, FOR NEW MATERIALS ONLY WILL BE APPROVED ON A SITE BY SITE BASIS SUBJECT TO THE REVIEW OF TRAFFIC, SCHOOL, PARKING, AND ANY OTHER CRITICAL FACTORS WHICH MAY ADVERSELY AFFECT THE AREAS WITHIN AND/OR ADJACENT TO THE CONSTRUCTION ZONE.
- ALL EXCAVATIONS ARE TO BE BACKFILLED IN LIFTS, WITH EACH SUCCESSIVE LIFT BEING COMPACTED ONLY WITH APPROVED MECHANICAL TYPE COMPACTORS AND/OR PNEUMATICALLY OPERATED TAMPING BITS, UNTIL SUCH TIME AS THE OPTIMUM COMPACTION REQUIREMENTS ARE OBTAINED. THIS IS STRICTLY ENFORCED TO ENSURE LONG-TERM STRUCTURAL INTEGRITY OF THE ROADWAY SYSTEM.
- AREAS BEYOND THE LIMITS OF THIS CONTRACT AND/OR STRUCTURES DISTURBED AND/OR DAMAGED BY THE CONTRACTOR, ARE TO BE REPAIRED AND/OR REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY ASPECTS OF THE PROJECT, AND COMPLIANCE WITH THE MOST CURRENT U.S. OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION (OSHA) & THE MASSACHUSETTS DEPT. OF LABOR DIVISION OF OCCUPATIONAL SAFE REGULATIONS (617-727-3982). THESE COMPLIANCE STANDARDS ARE OF PARTICULAR IMPORTANCE WITH REGARD TO TRENCH EXCAVATION SAFETY REQUIREMENTS.
- HOURS OF OPERATIONS ARE SET BY LAW. NO MACHINES OR EQUIPMENT ARE TO BE ACTIVATED BEFORE 7:00 A.M. & NO WORK IS TO EXTEND BEYOND 4:30 P.M. NO WEEKEND OR HOLIDAY WORK IS ALLOWED WITHOUT SPECIAL PERMISSION BY THE CITY. THE CONTRACTOR IS LIMITED TO AN EIGHT HOUR WORKDAY UNLESS OTHERWISE APPROVED BY THE CITY.
- PRIOR TO MOBILIZATION, THE CONTRACTOR IS TO COORDINATE WITH THE WATER DEPT. AND THE ENGINEER, AND IS THEN TO LOCATE, UNCOVER, BLOW-OUT, AND DETERMINE THE SERVICEABILITY OF ALL EXISTING GATE VALVES AND/OR HYDRANTS WHICH ARE TO BE UTILIZED TO PERFORM THE WORK. OPERATION OF THE GATE VALVES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND IS TO BE PERFORMED UNDER THE DIRECTION OF THE ENGINEER.
- THE CONTRACTOR MUST GIVE THE CITY OF NEWTON WATER DEPARTMENT (617-796-1640), THE CITY OF NEWTON CUSTOMER SERVICE CENTER (617-796-1000), THE NEWTON FIRE DEPT. (617-796-2210), AND THE NEWTON POLICE DEPT. (617-796-2100) AT LEAST 24 HOURS NOTICE PRIOR TO ANY SCHEDULED WATER MAIN SHUT-DOWN. IN ADDITION, ANY EMERGENCY SHUT-DOWN OF WATER MAINS IS TO BE REPORTED TO THESE SAME AUTHORITIES FOR EACH EVENT. FURTHER, ANY SCHEDULED WATER MAIN SHUT-DOWNS SHALL NOT BEGIN BEFORE 9:00 A.M. UNLESS OTHERWISE DIRECTED.
- THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING, CONSULTING WITH, AND SUBSTITUTING WITH, AND SUBSTITUTING WITH, AND SUBSTITUTING WITH, THE PROPERTY OF THE VISUALLY IMPAIRED OR WHO OTHERWISE MUST ACCESS THE AREAS(S).
- THE VARIOUS PROPOSED WATER MAINS, WATER SERVICES, HYDRANTS, VALVES, GENERAL SCOPE OF COMPONENTS AND THEIR RESPECTIVE LOCATIONS, AND OTHER APPURTENANCES WHICH ARE SHOWN ON THESE PLANS ARE SUBJECT TO CHANGE AT THE ENGINEERS DISCRETION IN THE FIELD.
- THE FINAL DETERMINATION OF THE PROJECT LIMITS(S) SHALL BE ESTABLISHED IN THE FIELD BY THE ENGINEER, INCLUSIVE OF WORK WHICH MUST BE PERFORMED ALONG THE OUTER PERIMETER(S) OF THE PROJECT ZONE(S) IN ORDER TO REPAIR DEFECTIVE WATER APPURTENANCES TO ISOLATE THE PROJECT ZONE FROM WATER PRESSURE INTERFERENCE.
- THE CONTRACTOR IS TO BAG AND TAG ALL OUT OF SERVICE HYDRANTS, AND IS TO NOTIFY THE CITY OF NEWTON FIRE DEPT. OF ALL OUT OF SERVICE HYDRANTS IN A MANNER ACCEPTABLE TO THE ENGINEER.
- ALL EXISTING WATER SERVICES SHALL BE RENEWED FROM THE MAIN TO THE PROPERTY LINE UNLESS OTHERWISE DIRECTED BY THE ENGINEER (NOTE: PVT. COUPLING SIZES WILL VARY). THIS WORK INCLUDES THE TAPPING OF THE MAIN (GENERALLY OF 1" SIZE, HOWEVER IN CERTAIN CASES A SERVICE COCK OF 1 1/2" OR 2" SIZE WILL BE REQUIRED).
- NEW COPPER WATER SERVICES, AS WELL AS THE NEW CURB STOP, ARE TO BE CONSISTENT IN SIZE WITH THE MAIN TAP. SUBSEQUENT TO THIS WORK THE CONTRACTOR IS TO FLUSH THE PIPE AT THE SILL COCK NEAREST TO THE METER, AND IF FURTHER ACTION IS DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR IS TO COORDINATE WITH THE BUILDING OWNER TO PERFORM THE REMOVAL, CLEARING AND REINSTALLATION OF THE WATER METER, METER VALVE AND SEAL.
- IF THE CONTRACTOR IS TO BE ACTIVELY AFFECTED BY THE SCHEDULED DISRUPTION OF THE WATER SUPPLY, THESE NOTICES MUST BE DELIVERED AT LEAST 24 HOURS IN ADVANCE OF EITHER THE SCHEDULED SHUT-DOWN AND/OR A REQUEST FOR ACCESS TO THE METER. NOTIFICATIONS SHALL BE ON A FORMAT APPROVED OR PROVIDED BY THE ENGINEER, AND SHALL BE POSTED IN A CONSPICUOUS MANNER AT EACH ADDRESS AND AS NEAR TO THE LOCATION OF THE REGULAR MAIL DELIVERY AS POSSIBLE.
- THE CONTRACTOR IS REQUIRED TO TAKE AS-BUILT TIES AS THE WORK PROGRESSES. THIS ACTIVITY IS TO TAKE PLACE UNDER THE DIRECT SUPERVISION OF THE ENGINEER AND ALL RECORDS ARE TO BE SUBMITTED ON A DAILY BASIS AND ON A FORMAT WHICH IS ACCEPTABLE TO THE ENGINEER.
- THE CONTRACTOR MUST PURGE ALL AIR FROM THE WATER MAINS & SERVICES WHEN THE VALVES ARE REOPENED, AND MAINTAIN LOW FLOW UNTIL SUCH TIME AS ALL DISCOLORATION AND AIR IS REMOVED FROM THE WATER SYSTEM.
- ALL SHORT TERM STEEL TRENCH PLATES, (UP TO FIVE CALENDAR DAYS USE), ARE TO BE SECURED IN SUCH A MANNER SO AS TO PREVENT MOVEMENT AND/OR RATTLING. ALL LONG-TERM PLATES ARE TO BE RECESSED INTO THE EXISTING ROADWAY.
- THE CONTRACTOR IS TO MAINTAIN AND/OR PROVIDE EMERGENCY VEHICLE ACCESS THROUGHOUT EACH PROJECT AREA. IN ADDITION, NO TRAFFIC DELAY IS TO EXCEED FOUR MINUTES IN DURATION ON ANY ARTERIAL ROAD. ALL SECONDARY ROADS MUST BE APPROPRIATELY DETOURED, MARKED, OR ADDITIONALLY SIGNED TO PREVENT DELAYS AND/OR CONFUSION.
- THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION, POSTING, AND SUBSEQUENT REMOVAL OF ALL TEMPORARY PARKING BANS. SIGNS ARE NOT TO BE POSTED ON TREES. THE CONTRACTOR IS TO NOTIFY THE CITY OF NEWTON TRAFFIC DIVISION (617-796-1490) AT LEAST 24 HOURS PRIOR TO ACTUAL POSTING.
- FOR FURTHER DETAILS NOT SHOWN ON THESE PLANS SEE CITY OF NEWTON GENERAL CONSTRUCTION DETAILS, A COPY OF WHICH CAN BE OBTAINED AT THE OFFICE OF THE CITY ENGINEER.
- TEMPORARY TRENCH PAVEMENT SHALL BE INSTALLED ON A WEEKLY BASIS. OWNER RESERVES THE RIGHT TO REQUEST PAVEMENT INSTALLATION AT MORE FREQUENT INTERVALS IF WEATHER OR OTHER CONDITIONS MAKE IT NECESSARY. THERE WILL BE NO ADDITIONAL COMPENSATION FOR CHANGES IN THE PAVING SCHEDULE. TEMPORARY PAVEMENT SHALL BE COMPLETELY REMOVED PRIOR TO THE INSTALLATION OF PERMANENT PAVEMENT. PERMANENT PAVEMENT SHALL BE INSTALLED AT A TIME SPECIFIED BY THE OWNER.
- IN THE EVENT THE ROADWAY CASTINGS HAVING BEEN COVERED AND FINAL TOP WILL NOT BE APPLIED BEFORE MANDATORY WINTER SHUT-DOWN, THEN THE CONTRACTOR IS TO RAISE ALL CASTINGS TO BINDER GRADE AT HIS OWN EXPENSE.
- THE CONTRACTOR MAY BE REQUIRED FROM TIME TO TIME TO MAKE SCHEDULE CHANGES AND/OR TO MAKE SPECIAL ACCOMMODATIONS IN ORDER TO ELIMINATE AND/OR MINIMIZE ANY ADVERSE IMPACT ON CERTAIN PUBLIC OR PRIVATE EVENTS, TRAFFIC, ETC.
- THE ILLUSTRATIONS OF PROPOSED WORK WHICH ARE SHOWN ON THESE PLANS ARE SUBJECT TO CHANGE BASED UPON FIELD CONDITIONS, OR AS MAY OTHERWISE BE NECESSARILY ALTERED BY THE ENGINEER.
- UPON THE COMPLETION OF THE RESPECTIVE WATER MAIN REHABILITATION ACTIVITIES, THE CONTRACTOR IS TO RESTORE ALL ROADWAY ELEMENTS IN ACCORDANCE WITH THE CASE-BY-CASE DIRECTIVES OF THE ENGINEER.
- THE CONTRACTOR IS TO SUBSTANTIALLY COMPLETE ALL WORK, EXCLUSIVE OF FINAL ROADWAY TOP, BEFORE ENTERING INTO THE NEXT DESIGNATED WORK ZONE, UNLESS, OR UNTIL, THE ENGINEER SO DIRECTS.
- THE CONTRACTOR IS NOT TO CUT THROUGH THE MAJOR PORTION OF THE ROOT SYSTEM OF STREET TREES UNLESS PERMITTED TO DO SO BY THE CITY OF NEWTON TREE SUPERINTENDENT.
- THE CONTRACTOR SHALL NOT TAKE DOWN ANY TREE LIMB UNTIL ALLOWED TO DO SO BY THE CITY OF NEWTON TREE SUPERINTENDENT. ANY SUCH LIMB REMOVAL SHALL BE DONE IN ACCORDANCE WITH THE TREE SUPERINTENDENTS INSTRUCTIONS. NO LIMBS ARE TO BE "SNAPPED" OFF.
- LEDGE/ROCK REMOVAL SHALL BE BY RAM HOE METHOD ONLY. ONLY IN EXTREME CASES WHERE THE CONTRACTOR HAS MADE EVERY REASONABLE EFFORT TO REMOVE THE LEDGE/ROCK BY THE RAM HOE METHOD, AND HAS FAILED, SHALL CONTROLLED BLASTING BE ALLOWED.
- THE ENGINEER SHALL BE SOLE JUDGE AS TO WHETHER OR NOT THE RAM HOE EQUIPMENT IS OF ADEQUATE SIZE TO SUIT BOTH THE AREA AND THE TASK, BEFORE THE BLASTING OPTION IS ALLOWED.
- NO DETOURS WILL BE ALLOWED UNLESS APPROVED AND/OR DIRECTED BY THE ENGINEER, HOWEVER DETOURING IS NOT TO BE FACTORED INTO THE CONTRACTORS OPERATIONAL PLANS FOR THIS PROJECT.
- ALL DETOURS SHALL BE CLEARLY MARKED ALONG THEIR ENTIRE ROUTE, AND ONLY WITH APPROVED DEVICES & SIGNS, SUCH THAT A STEADY STREAM OF TRAFFIC IS TO BE SAFELY MAINTAINED AT ALL TIMES.
- NON-EMERGENCY DETOURS MUST BE APPROVED BY THE CITY OF NEWTON TRAFFIC ENGINEER AT LEAST 24 HOURS IN ADVANCE OF THE EVENT. TO THAT END THE CONTRACTOR MAY BE REQUIRED TO PROVIDE A HARD-COPY TRAFFIC CONTROL PLAN TO THE TRAFFIC ENGINEER FOR COMMENTARY OR APPROVAL.
- THE CONTRACTOR IS REQUIRED TO STRATEGICALLY SCHEDULE HIS WORK IN ORDER TO MINIMIZE THE IMPACT ON ESTABLISHED TRUCK, FIRE DEPT., PUBLIC WORKS AND COMMUTER TRAFFIC PATTERNS. TO THAT END THE CONTRACTOR IS TO RESTRICT HIS OPERATIONS TO THE SPECIFIC WORK ZONE (WHICH MAY BE MODIFIED BY DIRECTION OR BY MUTUAL AGREEMENT). FURTHER, THE CONTRACTOR IS NOT TO BEGIN EXCAVATION OPERATIONS IN THE NEXT WORK ZONE UNTIL THE WORK IN THE PREVIOUS WORK ZONE HAS BEEN SUBSTANTIALLY COMPLETED TO THE SATISFACTION OF THE ENGINEER.
- THE CITY OF NEWTON RESERVES THE RIGHT TO DESIGNATE THE ORDER IN WHICH THE WORK IS COMPLETED, THE INTENT IS TO MINIMIZE THE IMPACT WHICH THE CONSTRUCTION RELATED ACTIVITIES MAY HAVE ON SCHEDULED PUBLIC EVENTS, ON PEAK PERIODS OF TRAFFIC, ON SCHOOL OPERATIONS, ETC. TO THAT END, THE CONTRACTOR IS REQUIRED TO WORK CLOSELY WITH THE CITY OF NEWTON TO CREATE THE BEST OVERALL SCHEDULE, WHICH MUST BE EXPECTED TO CHANGE FROM TIME TO TIME AS FIELD CONDITIONS, WEATHER, AND/OR OTHER SITUATIONS MAY DICTATE.
- UTILITY MAINS, SEWER HOUSE CONNECTIONS AND/OR WATER SERVICES LOCATED ALONG THE PROJECT CORRIDOR(S) ARE NOT ALWAYS SHOWN IN THEIR ENTIRETY, NOR IN THEIR EXACT LOCATIONS, THEREFORE ANY SUPPLEMENTAL HARD-COPY SERVICE AND/OR TRUNK LINE RELATED INFORMATION MUST BE RETRIEVED AND SUBSEQUENTLY LAID OUT AND CLEARLY MARKED IN THE FIELD BY THE CONTRACTOR. THE AFOREMENTIONED HARD-COPY INFORMATION WILL BE SUPPLIED BY THE CITY ONLY IF SUCH RECORDS EXIST AND SHALL BE SUPPLIED ON A CASE-BY-CASE BASIS AS SUPPLEMENTAL STREET OPENINGS ARE IDENTIFIED BY THE CONTRACTOR, OR AS THEY MAY BE OTHERWISE REQUIRED BY THE ENGINEER.
- STREET OPENINGS ARE TO BE MADE ONLY WITH THE PRIOR APPROVAL OF THE CITY ENGINEER. THE INTENT OF THE ORDER IS TO PREVENT AN OVERABUNDANCE OF STREET OPENINGS AND/OR TO MINIMIZE THE IMPACT THAT THESE OPERATIONS WILL HAVE ON TRAFFIC RELATED ISSUES.
- CONTRACTOR SHALL PROTECT THE STRUCTURAL INTEGRITY OF ALL CAST IRON GAS MAINS 6 INCHES AND SMALLER IN ACCORDANCE WITH 220 CMR 113. CONTRACTOR SHALL LIMIT TRENCH WIDTH TO 3 FEET MAXIMUM WHERE UNDER MINING OCCURS AT A PERPENDICULAR CROSSING.
- SILT SACKS SHALL BE USED ON ALL CATCH BASINS WITHIN PROJECT LIMITS TO MINIMIZE SILT DEPOSITS INTO DRAINAGE SYSTEM.
- AT LOCATIONS WHERE TEMPORARY SERVICES CROSS THE ROAD, SERVICES SHALL BE ADEQUATELY PROTECTED IN A SOLID SLEEVE, PLACED IN A TRENCH OF ADEQUATE DEPTH AND COVERED WITH BITUMINOUS PAVEMENT TO PREVENT BREAKAGE DURING CONSTRUCTION.
- ALL ROADWAYS ARE ASPHALT UNLESS OTHERWISE NOTED.
- TEMPORARY BY-PASS PIPING FIRE SERVICE CONNECTIONS (WHETHER SHOWN ON THESE PLANS OR NOT), AND PUBLIC HYDRANT RISERS ARE TO BE ESTABLISHED AND MAINTAINED AT ALL TIMES VIA A BY-PASS PIPING SYSTEM, BASED UPON A 'TARGET' PLAN THAT HAS BEEN PRE-APPROVED BY THE ENGINEER, WHICH AT A MINIMUM SHOWS THE PIPE SIZE, MATERIAL, LOCATIONS OF RECESSED CROSSINGS & TEMPORARY HYDRANT LOCATIONS.
- BY-PASS PIPES ARE NOT TO INTERFERE WITH PEDESTRIAN, HANDICAP, OR VEHICULAR TRAFFIC. ALL TEMPORARY BY-PASS PIPING SHALL BE RECESSED. SUPPLEMENTAL RAMPING AND/OR ADDITIONAL 'CUT-IN'/HOT MIX CAPPED RECESSED PIPES, OR THEIR APPURTENANCE, WILL BE AT THE DISCRETION OF THE ENGINEER SHOULD THE NECESSITY ARISE DURING THE COURSE OF THE PROJECT.
- THE CONTRACTOR IS TO PROVIDE A TEMPORARY FIRE LINE BY-PASS CONNECTION TO ALL BUILDINGS THAT ARE CURRENTLY SERVICED BY A FIRE LINE.
- ALL TEMPORARY BY-PASS, CEMENT CONCRETE AND/OR PERMANENT BITUMINOUS PATCH WORK (SUBJECT TO APPLICABLE RESTRICTIONS) MUST BE COMPLETED PRIOR TO THE ONSET OF FREEZING AND/OR WINTER CONDITIONS (OCTOBER 31 TARGET). ALL OTHER WORK MUST BE COMPLETED BY NOVEMBER 30TH, UNLESS A WRITTEN ORDER HAS BEEN ISSUED BY THE ENGINEER TO DO OTHERWISE.
- PRIOR TO THE START OF CONSTRUCTION, A TEMPORARY BY-PASS PIPING SYSTEM SHALL BE INSTALLED, CHLORINATED, AND TESTED PRIOR TO INSTALLING TEMPORARY SERVICE CONNECTIONS. THE LOCATION, METHOD, AND MATERIAL OF THE TEMPORARY BY-PASS PIPING SYSTEM SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND THE CONTRACTOR SHALL SUBMIT A BY-PASS PIPING PLAN FOR ENGINEER REVIEW AND APPROVAL PRIOR TO INSTALLATION. ALL TEMPORARY BY-PASS PIPING SHALL BE RECESSED.
- PAYMENT FOR TEMPORARY BY-PASS PIPING SHALL BE LUMP SUM. TEMPORARY BY-PASS SYSTEM REQUIRES A MINIMUM OF A 4-INCH AND 2-INCH PIPING SYSTEM THROUGHOUT PROJECT EXTENTS. ALL COMPONENTS IN TEMPORARY BY-PASS PIPING SYSTEM SHALL BE NSF-61 APPROVED AND SUBMITTED TO ENGINEER FOR APPROVAL.
- TEMPORARY BY-PASS PIPING WILL BE USED ALONG THE ENTIRE LENGTH OF THE PROJECT AREAS.
- CONTRACTOR SHALL RECESS ALL TEMPORARY BY-PASS PIPING.
- TEST PITS SHALL BE DUG AT EACH EXISTING WATER SERVICE ALONG THE PROJECT LIMITS TO DETERMINE THE WATER SERVICE LINE MATERIAL. ALL SERVICES THAT ARE NOT COPPER SHALL BE REPLACED. ALL COPPER SERVICES SHALL REMAIN.
- EXISTING WATER MAIN SHALL BE REMOVED AND PROPERLY DISPOSED OF WHERE NEW WATER MAINS ARE PROPOSED.
- **ALL MWRA WATER MAINS SHOWN ARE APPROXIMATE LOCATIONS. CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATION OF MWRA MAINS. CONTRACTOR SHALL CONTACT AND COORDINATE ALL WORK THAT ENDOUCHES UPON MWRA WATER MAINS WITH MWRA.
- WHERE AN EXISTING WATER SERVICE IS NOT SHOWN, PROPOSED WATER SERVICE LOCATION IS APPROXIMATE. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING SERVICE IN THE FIELD PRIOR TO INSTALLING NEW SERVICE LINE.
- ALL HOMES IN THE PROJECT AREA ARE SERVED BY MWRA SEWER. EXISTING SEWER SERVICES ARE SHOWN ON BUILDINGS WHERE INFORMATION WAS AVAILABLE. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING SEWER SERVICE IN FIELD BEFORE EXCAVATION.
- ALL EXISTING WATER SERVICES THAT HAVE BEEN IN SERVICE FOR MORE THAN 20 YEARS BASED ON THE CITY'S RECORDS, REGARDLESS OF EXISTING MATERIAL, SHALL BE REPLACED UNDER THIS CONTRACT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
— W —	WATER MAIN	— W —
— W —	WATER SERVICE	— W — W —
⊗	GATE VALVE	▶▶
▷	REDUCER	▶
	TRANSITION COUPLING	
⌈┐┌┐┌┐┌	PIPE FITTINGS	⌈┐┌┐┌┐┌
⌈┐┌┐┌┐┌	CAP	⌈┐┌┐┌┐┌
●	FIRE HYDRANT	●
⊙	CURB STOP	●
⊙	WATER MANHOLE	
⊙	SEWER MANHOLE	
⊙	DRAIN MANHOLE	
⊙	CATCH BASIN	
⊙	ELEVATION	
⊙	FINISHED FLOOR ELEVATION	
⊙	UTILITY POLE	
— G —	GAS LINE	
— G —	GAS VALVE	
— S —	SILT SACK	
⊗	CLEANING AND LINING	
⊗	TEST PIT	

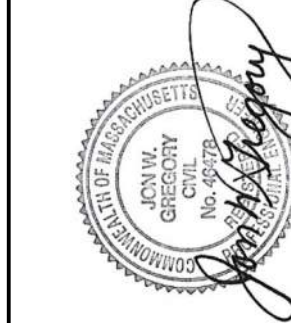
ABBREVIATIONS

APPROX.	APPROXIMATE
BV	BUTTERFLY VALVE
CB	CATCH BASIN
CI	CAST IRON
CIBL	CAST IRON BITUMINOUS LINED
CICL	CAST IRON CEMENT LINED
CONC.	CONCRETE
DI	DUCTILE IRON
DIA	DIAMETER
DMH	DRAIN MANHOLE
DWGS	DRAWINGS
ELEV.	ELEVATION
FF	FINISHED FLOOR ELEVATION
FM	FORCE MAIN
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HYD	HYDRANT
INV.	INVERT
LR	LONG RADIUS
MAX.	MAXIMUM
MIN.	MINIMUM
MJ	MECHANICAL JOINT
PE	POLYETHYLENE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RD	RESIDUALS/DRAIN
RCP	REINFORCED CONCRETE PIPE
SMH	SEWER MANHOLE
TYP.	TYPICAL
VERT.	VERTICAL

NEWTON MASSACHUSETTS CHESTNUT STREET PHASE II WATER MAIN CLEANING AND LINING

GENERAL PROCESS AND CONSTRUCTION NOTES

Description	Date	Rev.



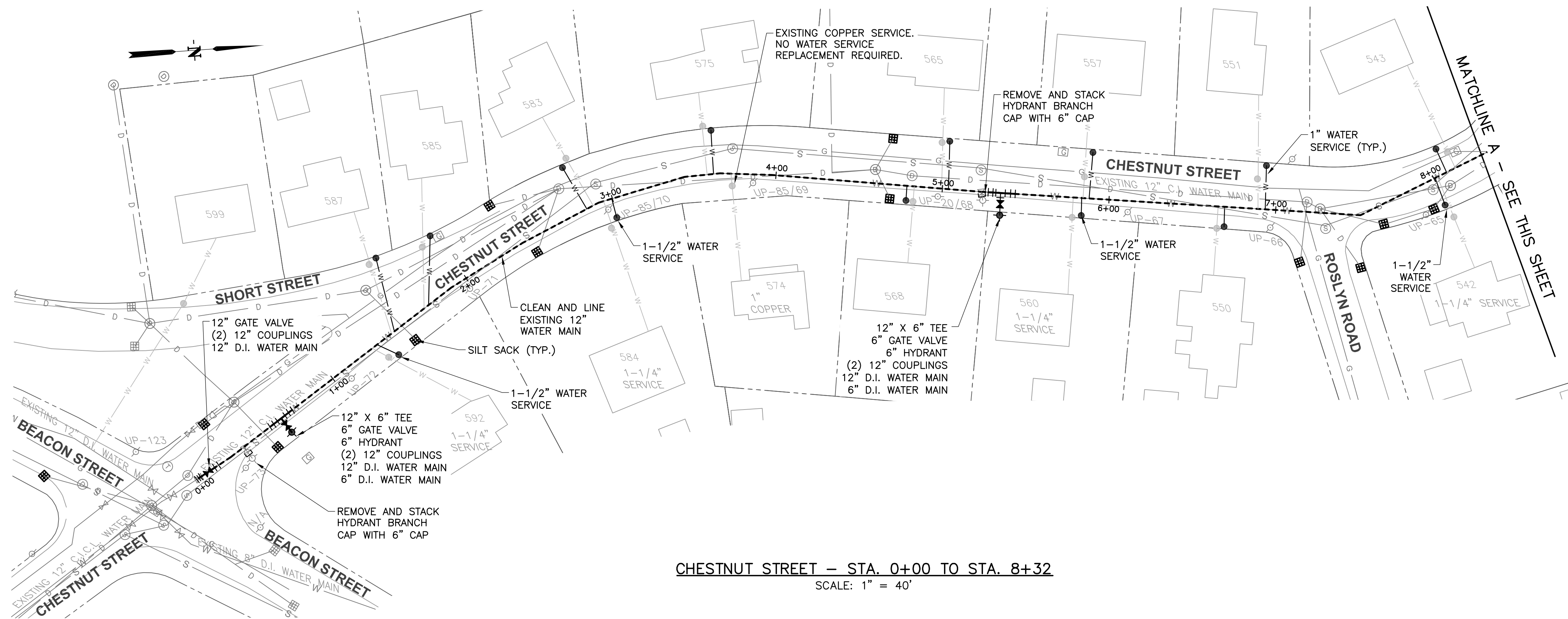
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DATE: APRIL 2021
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C-1



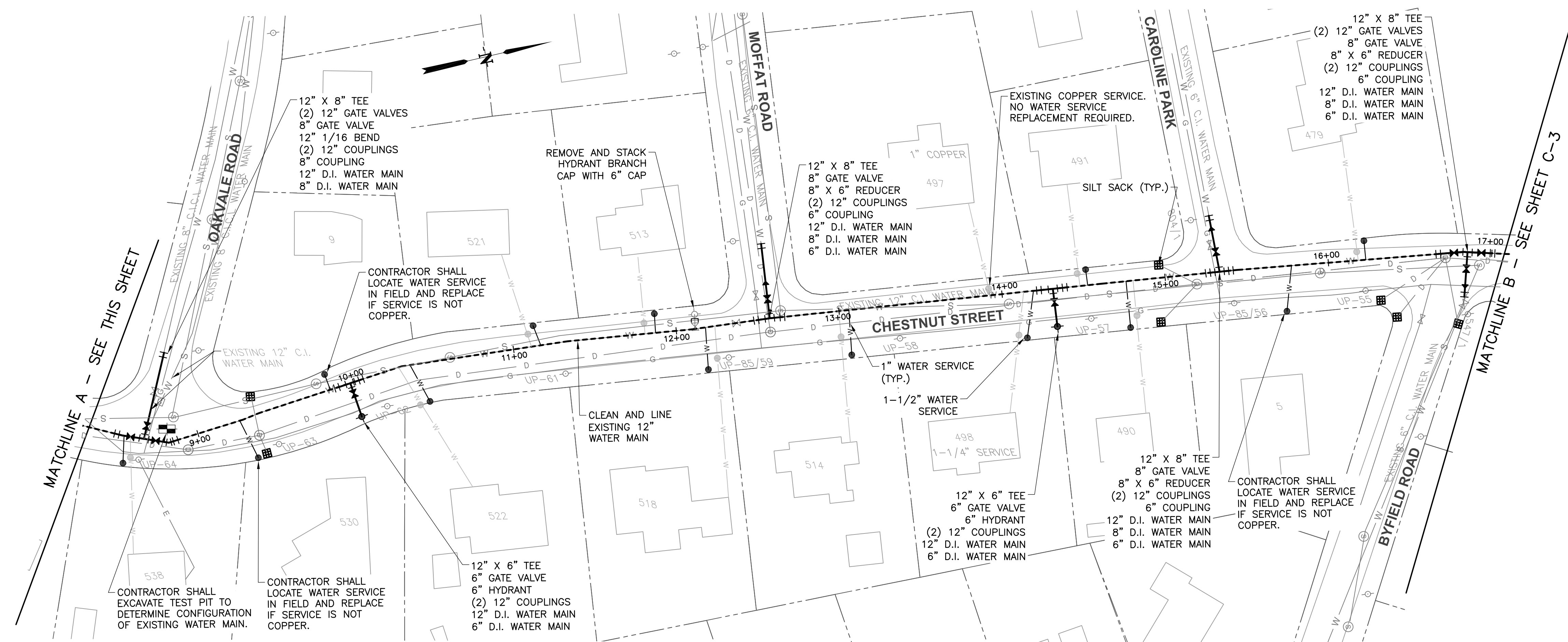
LOCUS MAP



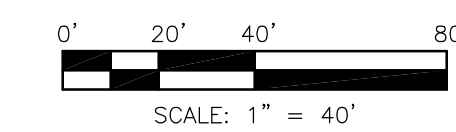
**NEWTON CITY HALL
1000 COMMONWEALTH AVENUE
NEWTON CENTRE, MA 02459**



CHESTNUT STREET – STA. 0+00 TO STA. 8+32
SCALE: 1" = 40'



CHESTNUT STREET – STA. 8+32 TO STA. 17+08
SCALE: 1" = 40'



NEWTON
MASSACHUSETTS
CHESTNUT STREET PHASE II
WATER MAIN CLEANING AND LINING

CHESTNUT STREET
STA 0+00 TO STA 17+08

Rev.	Date	Description



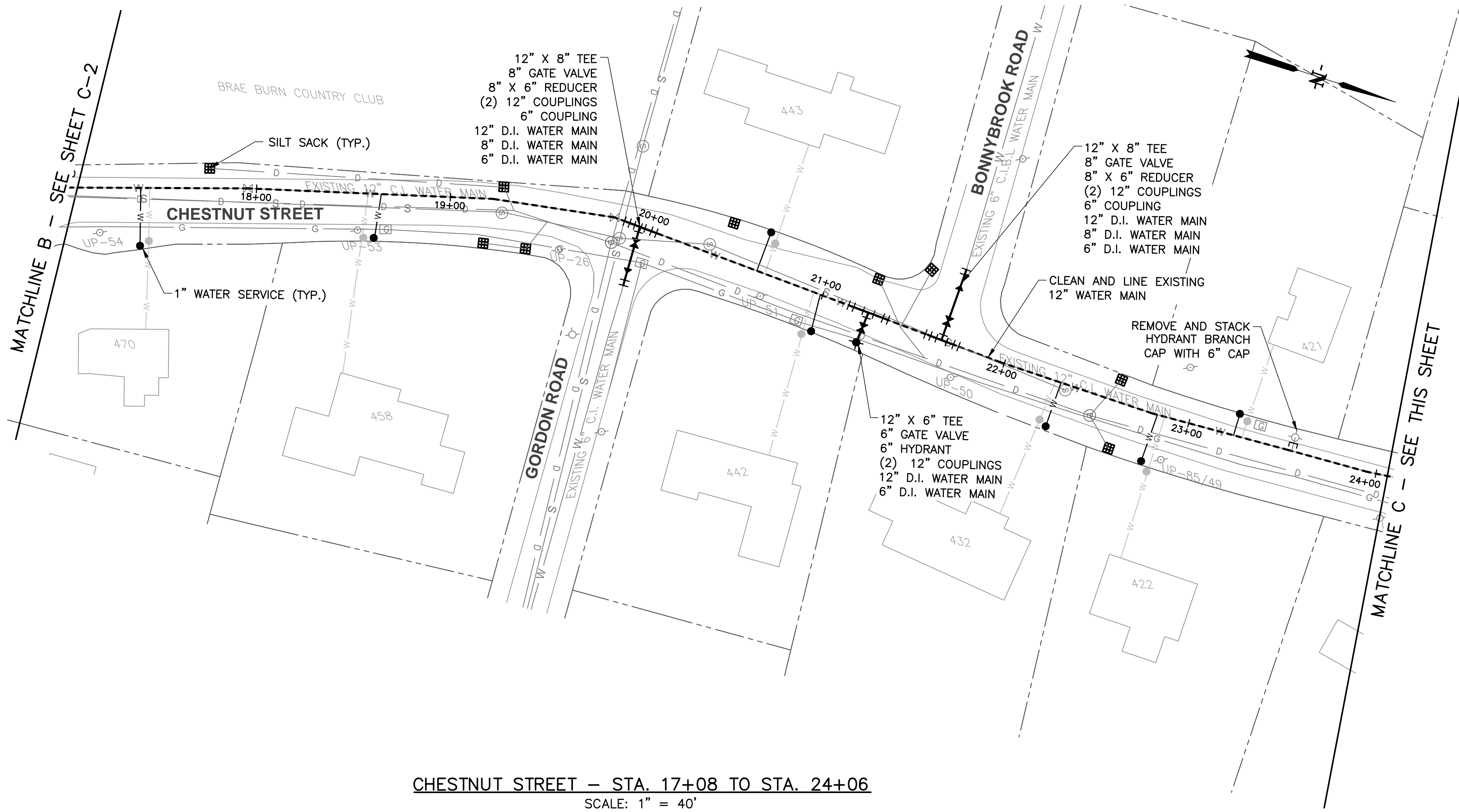
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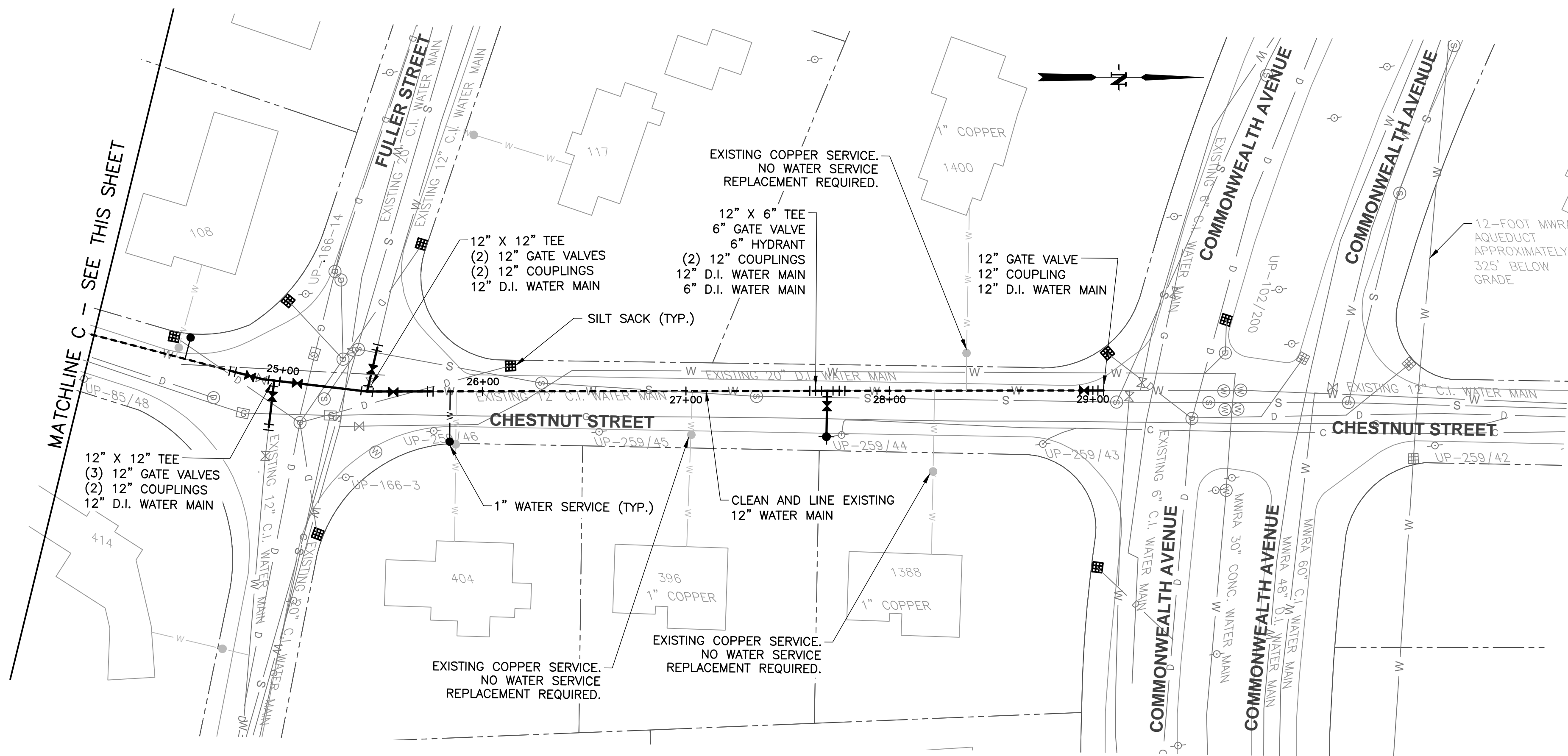
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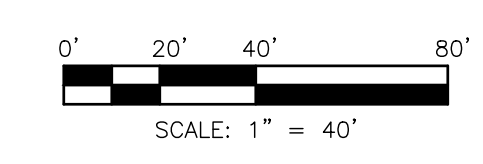
Drawn By: CM/JAW
Checked By: RSH
Approved By: JWG



CHESTNUT STREET – STA. 17+08 TO STA. 24+06
SCALE: 1" = 40'



CHESTNUT STREET – STA. 24+06 TO STA. 29+05
SCALE: 1" = 40'



NEWTON
MASSACHUSETTS
CHESTNUT STREET PHASE II
WATER MAIN CLEANING AND LINING

CHESTNUT STREET
STA 17+08 TO STA 29+05

Drawn By: CM/JAW
Checked By: FBH
Approved By: JMC

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Rev.	Date	Description



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DATE: APRIL 2021
SCALE: 1"=40'

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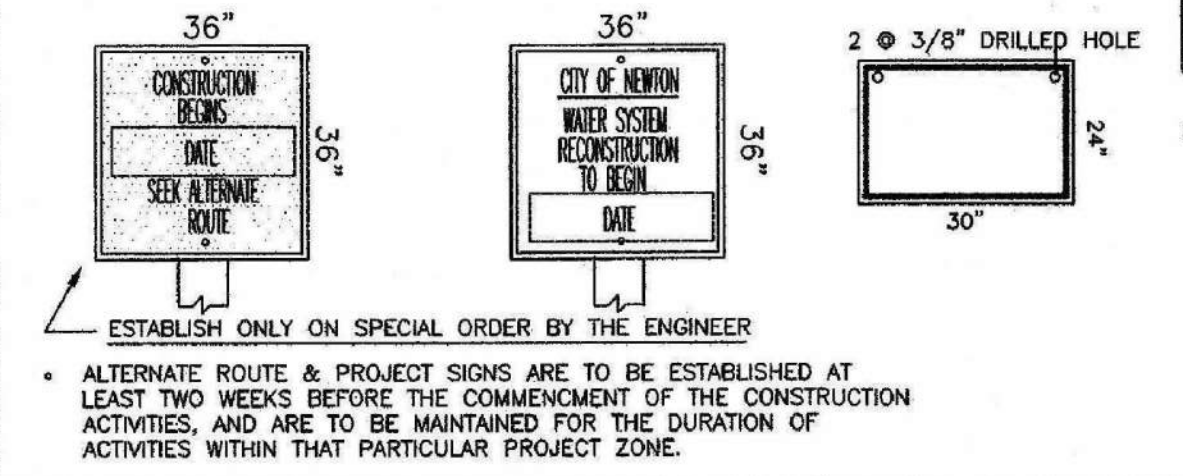
SIGN REQUIREMENTS & LEGEND:

- SIGNS ARE TO BE FIRMLY FASTENED TO THE RESPECTIVE SUPPORTS AND/OR DRUMS AND ARE TO COMPLY WITH THE DIRECTIVES OUTLINED IN THE GENERAL CONSTRUCTION DETAILS.
- POST MOUNTED SIGNS ARE TO BE SET IN FULL VIEW WITH THE BOTTOM OF THE SIGN NOT LESS THAN 7" NOR MORE THAN 10" ABOVE THE ADJACENT GRADE.
- SIGNS ARE TO BE PROFESSIONALLY MADE OF 3/4" EXTERIOR BLYTHYLENE. THE FIELD IS TO BE REFLICORIZED ORANGE BEARING A BLACK LEGEND 6" IN HEIGHT AND A BLACK SOLID 1" BORDER SET 1 1/4" IN FROM THE EDGE.
- ANY SIGN WHICH IS DAMAGED FOR ANY REASON DURING THE TERM OF THE PROJECT IS TO BE IMMEDIATELY REPLACED.
- ANY MISSING SIGN SHALL REDUCE THE PAYMENT AT THE RATE OF THE PRO-RATED VALUE FOR THE LENGTH OF TIME THAT THE SIGN IS OUT OF SERVICE.
- SIGNS AND SIGN POSTS ARE TO BE MOUNTED AND ESTABLISHED SO AS TO BE BOTH STURDY AND WIND RESISTANT. ONLY ADEQUATELY SIZED NUT, BOLT & WASHER FASTENERS SHALL BE USED. NO NAILS ARE TO BE USED TO FASTEN ANY SIGN, NOR SHALL ANY SIGN BE MOUNTED ON ANY TREE. THE SIGN LOCUS ON THESE PLANS REPRESENTS THE MOST LIKELY LOCATIONS. HOWEVER, FINAL LOCATIONS AND/OR SUPPLEMENTAL SIGNS AND DRUMS SHALL BE LOCATED, RELOCATED, AND/OR PLACED AS THE OPERATIONAL PROCESS MAY NECESSITATE AND/OR AS DIRECTED BY THE ENGINEER.
- SIGNS SHALL BE PLACED IN THE MOST CONSPICUOUS LOCATIONS AS A MEANS FOR BOTH VEHICULAR AND PEDESTRIAN WARNING, HOWEVER, IN NO CASE SHALL ANY SIGN IMPEDE THE SIGHT LINE NOR INTERFERE WITH EITHER PEDESTRIAN AND/OR VEHICULAR TRAFFIC.

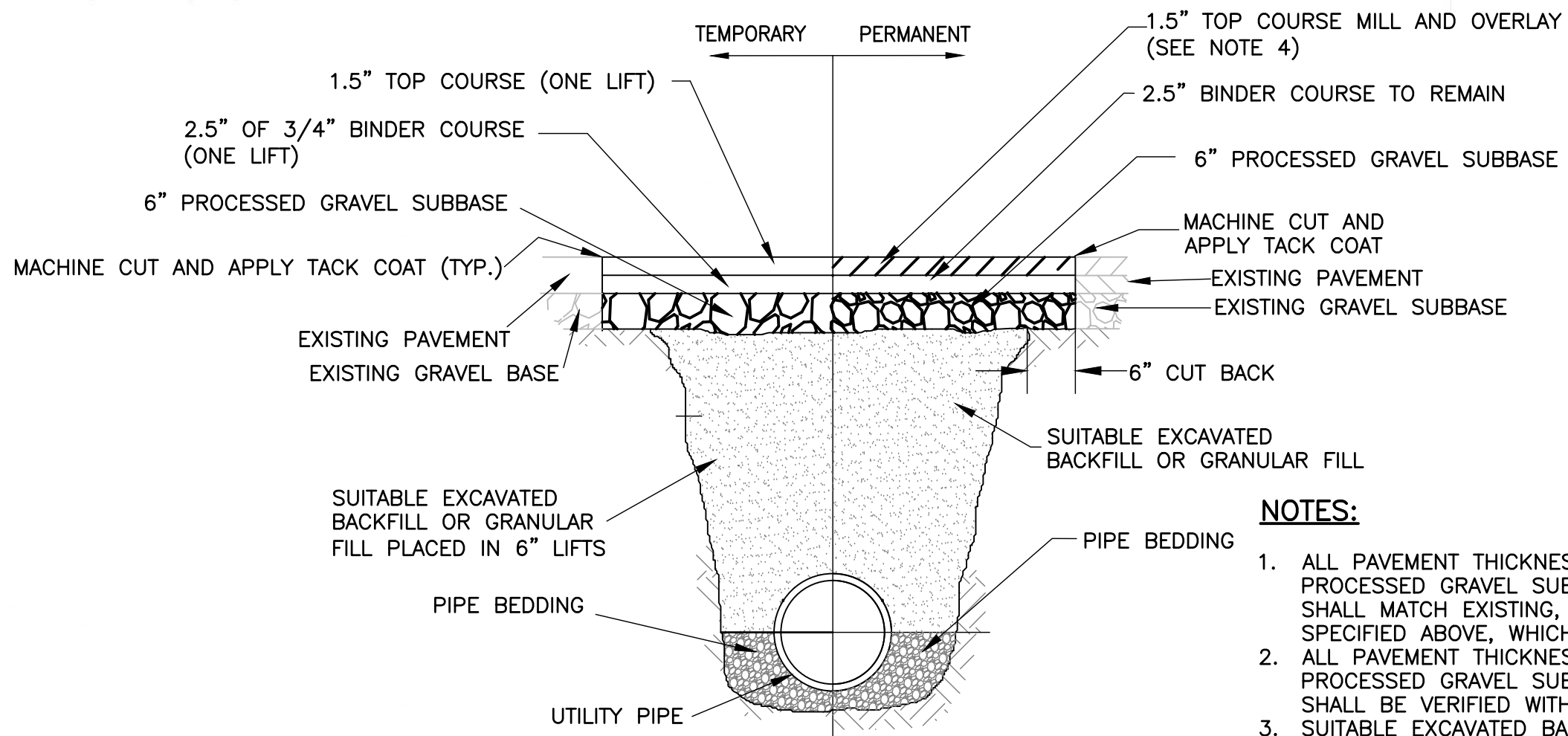
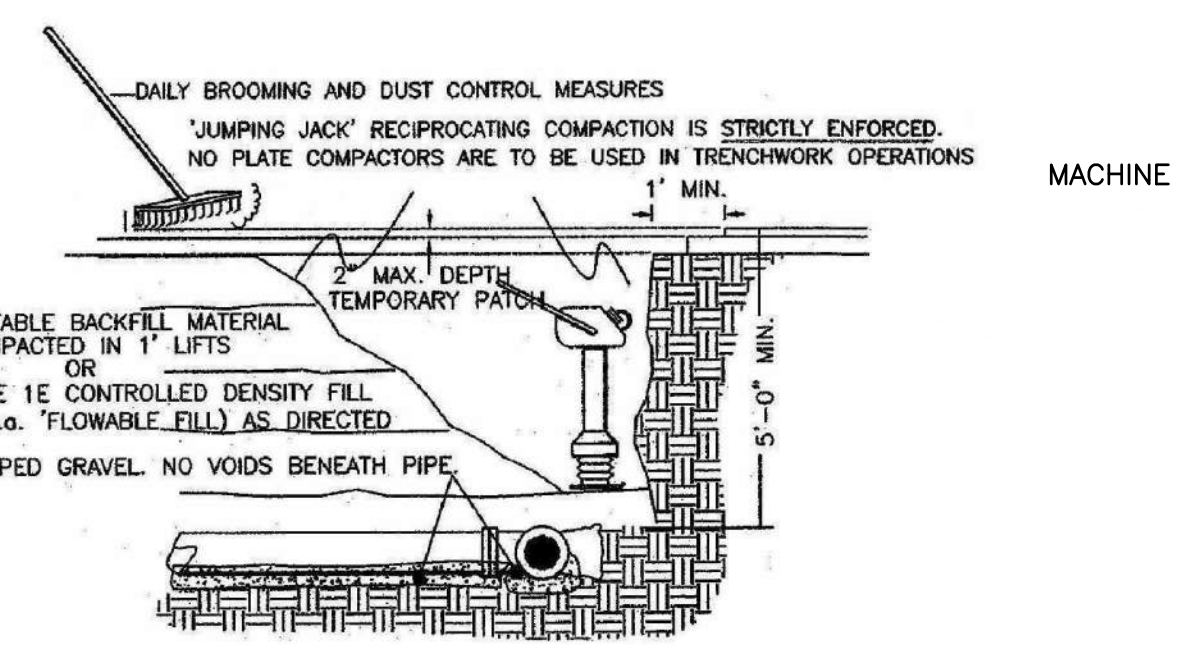


DRUM REQUIREMENTS: (STANDARD LOCUS NOT SHOWN. QUANTITY & LOCATIONS AS REQUIRED)

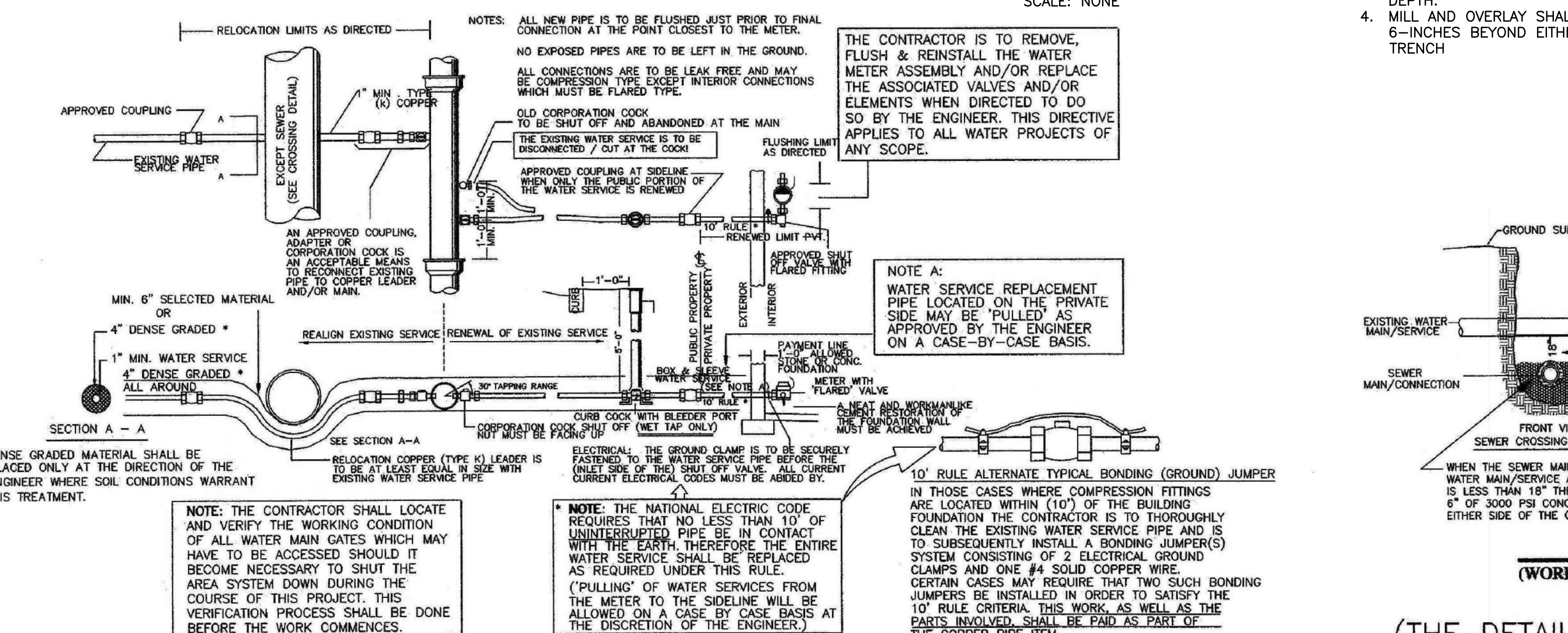
- STANDARD TYPE ARE TO COMPLY WITH THE FOLLOWING DIRECTIVES AND TO THE WRITTEN CONTRACT SPECIFICATIONS:
 - THEY ARE TO BE PLASTIC DRUMS, COMPLYING WITH M.U.T.D. AND EQUIPPED WITH OPERATING TYPE 'C' FLASHERS.
 - DRUMS ARE TO BE U.V. RESISTANT, LOW DENSITY, IMPACT RESISTANT POLYETHYLENE.
 - REFLECTORIZED SHEETING IS TO BE OF AN APPROVED ORANGE AND WHITE TYPE IV SHEETING CONFORMING TO M.U.S.D.10.
 - MINIMUM WALL THICKNESS IS TO BE 3/32"
 - MINIMUM DRUM DIAMETER SHALL BE 18"
 - DRUMS SHALL BE APPROXIMATELY 36" IN HEIGHT
 - ALL DRUMS SHALL BE MAINTAINED AND WHEN IT LOSES ITS TARGET VALUE (INCLUDING DUST BUILD-UP) IT IS TO BE REPLACED.
 - ALL DRUMS ARE TO BE EQUIPPED WITH BASES THAT DO NOT DETACH WHEN THE DRUM IS DRAGGED AND EACH DRUM IS TO BE PROPERLY WEIGHTED TO FULLY RESIST 65 MPH WIND CONDITIONS.
- THE 'RC' AND 'D' TYPE DRUM LOCATIONS THAT ARE SHOWN ON THESE PLANS DEPICT THE MINIMUM NUMBER OF RESPECTIVE PERIMETER DRUMS THAT MUST BE INITIALLY PLACED 'AT THE READY' TO CONTROL THE TRAFFIC FOR THAT SECTION OF ROADWAY WHICH IS ACTIVELY UNDER CONSTRUCTION. HOWEVER, THE NUMBER, TYPE & LOCATION OF DRUMS MAY VARY AS THE ENGINEER DEEMS NECESSARY, AND ONLY WHEN THE ENGINEER DIRECTS ARE THESE DRUMS TO BE MOVED TO THEIR NEW 'AT THE READY' LOCATIONS WITHIN THE SAME PROJECT ZONE, AND ONCE RELOCATED THEY ARE NOT TO BE MOVED FROM THAT RE-POSITIONED LOCATION UNTIL DIRECTED TO DO SO.
- AT THE BEGINNING OF EACH WORKDAY, AND/OR AS OTHERWISE DIRECTED THROUGHOUT THE COURSE OF THE WORKDAY, THE CONTRACTOR IS TO ESTABLISH AND MAINTAIN A WELL MARKED DETOUR ROUTE, AND IS TO FURTHER COORDINATE THIS EFFORT WITH THE ON-SITE POLICE DETAILS. ALL DETOUR ROUTES SHALL TAKE INTO CONSIDERATION BUS STOPS, BUS AND TRUCK TRAFFIC, SCHOOL CROSSINGS, BUSINESS TRAFFIC, ETC., AND ARE TO BE ESTABLISHED SO AS TO HAVE THE LEAST ADVERSE IMPACT ON THE AREA.
- 'RC' & 'D' TYPE ARE TO COMPLY WITH ALL DIRECTIVES LISTED FOR 'STANDARD TYPE' IN ADDITION TO THE FOLLOWING SPECIAL INSTRUCTIONS:
 - DRUMS ARE TO BE ESTABLISHED FOR EACH PHASE AT EACH INTERSECTION PER THE ACCOMPANYING LOCUS PLAN, OR AS DIRECTED, AND ARE NOT TO BE REMOVED FROM THE DESIGNATED INTERSECTIONS FOR THE ENTIRE TERM OF THE PHASE BUT ARE TO BE LEFT AT THE READY FOR IMMEDIATE ACCESS AND USE.
 - THE REMOVABLE BOTTOMS OF SUCH DRUMS ARE TO BE PERMANENTLY ATTACHED TO THE DRUM ITSELF SUCH THAT THE BASE WILL NOT SEPARATE FROM THE DRUM WHEN IT IS DRAGGED BUT YET WILL BREAK FREE IF HIT. FASTENERS ARE TO BE LIGHT DUTY. 'TIRE TYPE' HEIGHTS MAY BE USED IN LIEU OF FASTENED BOTTOMS.
 - DRUMS ARE TO BE MOVED INTO AND OFF OF THE ROADWAY AS NECESSARY AND/OR AS DIRECTED. WHILE FULL SITE REMOVAL WILL BE AT THE DISCRETION OF THE ENGINEER.
 - ONE SIGN IS TO BE PERMANENTLY FASTENED TO THE DRUM.
 - SIGNS ARE TO BE ATTACHED TO THE DRUM WITH 3/8" HEAVY DUTY NUT, BOLT, AND FENDER WASHER FASTENERS WITH A MINIMUM OF FOUR EQUALLY SPACED FASTENERS PER SIGN.
 - THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ESTABLISHING DAILY DETOURS TO THE SATISFACTION OF THE ENGINEER.



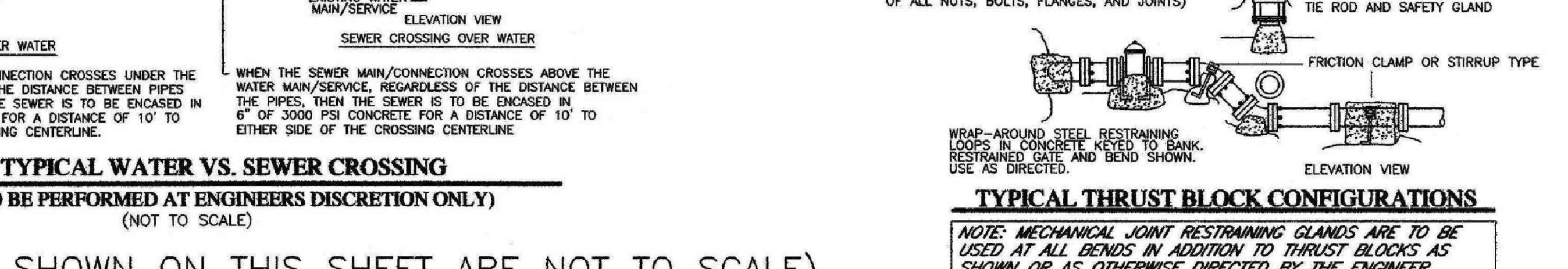
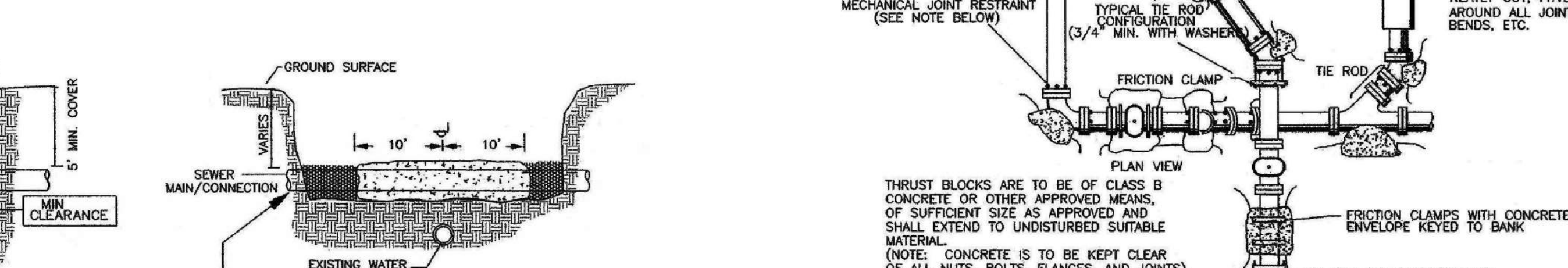
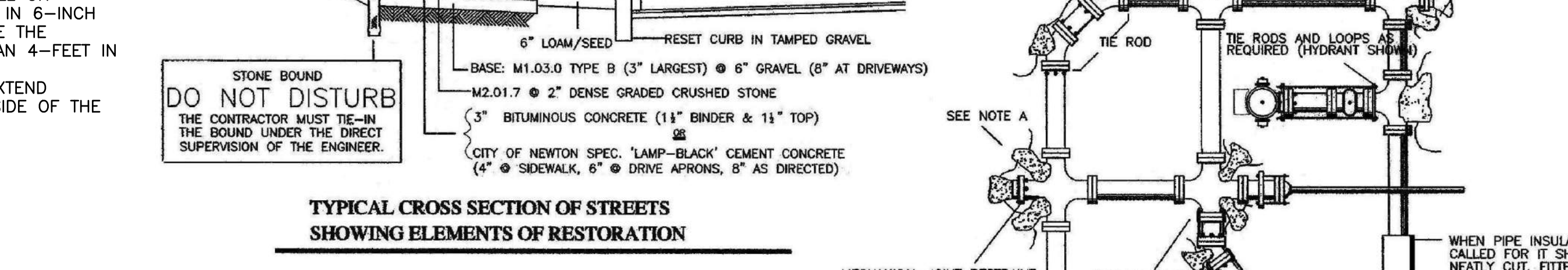
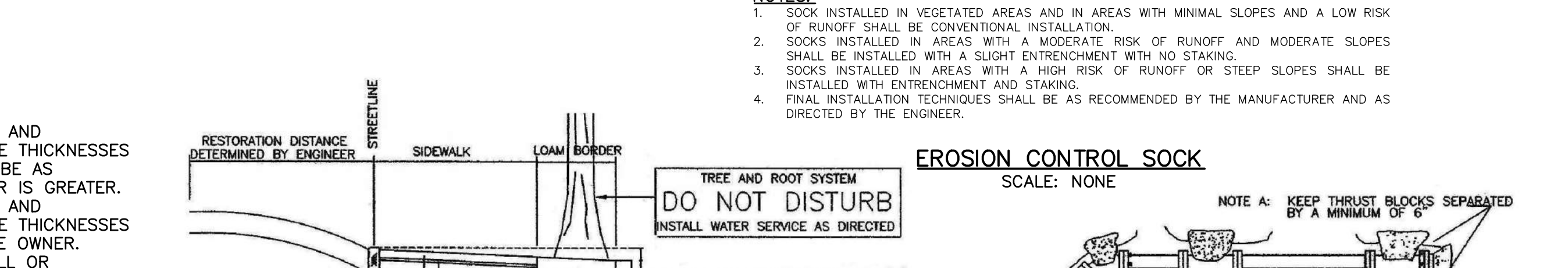
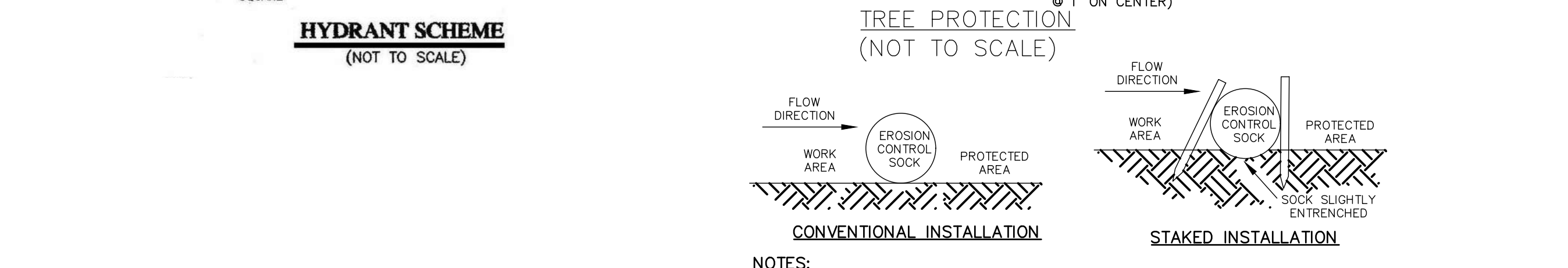
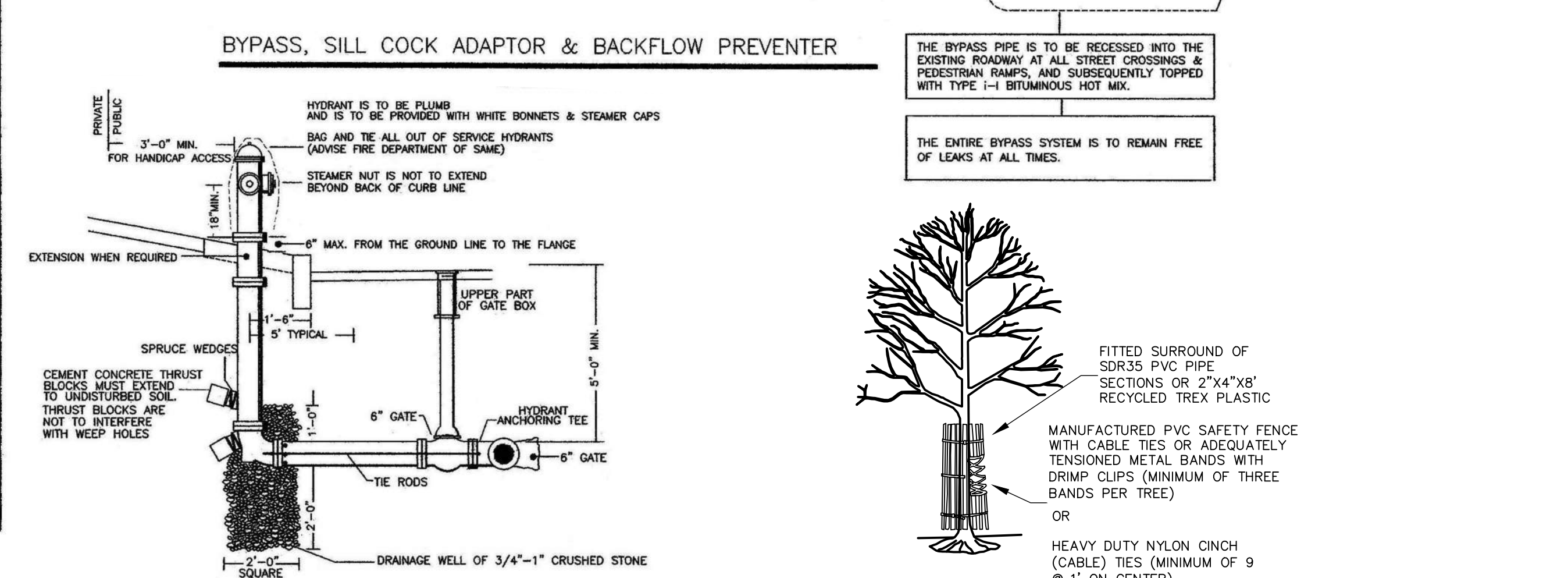
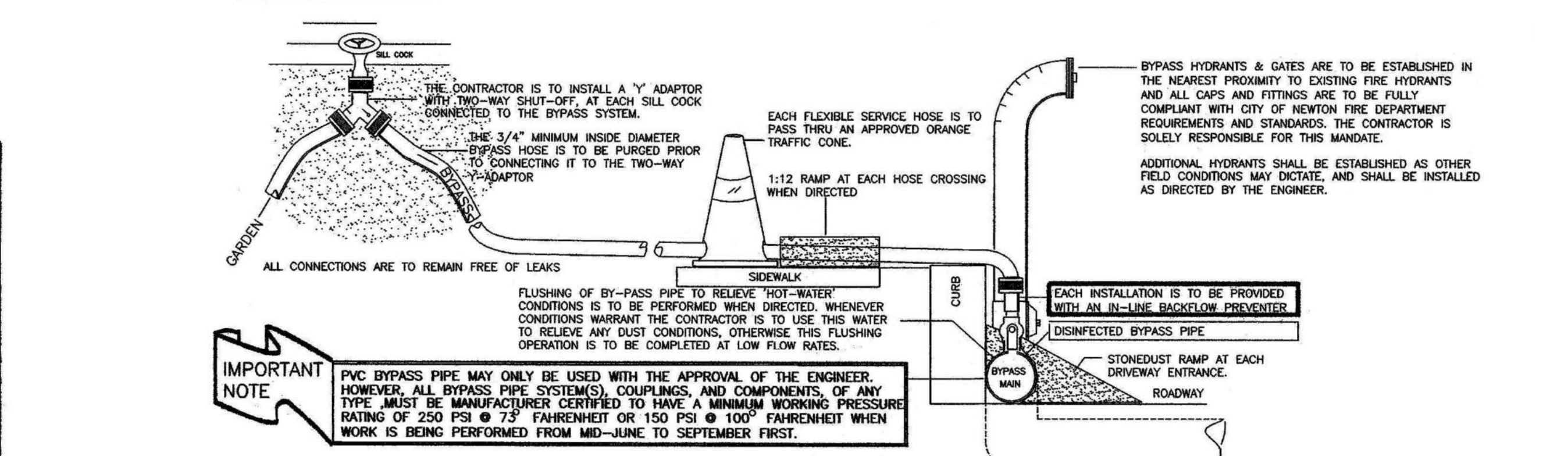
- ALTERNATE ROUTE & PROJECT SIGNS ARE TO BE ESTABLISHED AT LEAST TWO WEEKS BEFORE THE COMMENCEMENT OF THE CONSTRUCTION ACTIVITIES, AND ARE TO BE MAINTAINED FOR THE DURATION OF THE ACTIVITIES WITHIN THAT PARTICULAR PROJECT ZONE.



- NOTES:**
- ALL PAVEMENT THICKNESSES AND PROCESSED GRAVEL SUBBASE THICKNESSES SHALL MATCH EXISTING, OR BE AS SPECIFIED ABOVE, WHICHEVER IS GREATER.
 - ALL PAVEMENT THICKNESSES AND PROCESSED GRAVEL SUBBASE THICKNESSES SHALL BE VERIFIED WITH THE OWNER.
 - SUITABLE EXCAVATED BACKFILL OR GRANULAR FILL, COMPACTED IN 6-INCH LIFTS, IS ACCEPTABLE WHERE THE TRENCHES ARE GREATER THAN 4- FEET IN DEPTH.
 - MILL AND OVERLAY SHALL EXTEND 6-INCHES BEYOND EITHER SIDE OF THE TRENCH

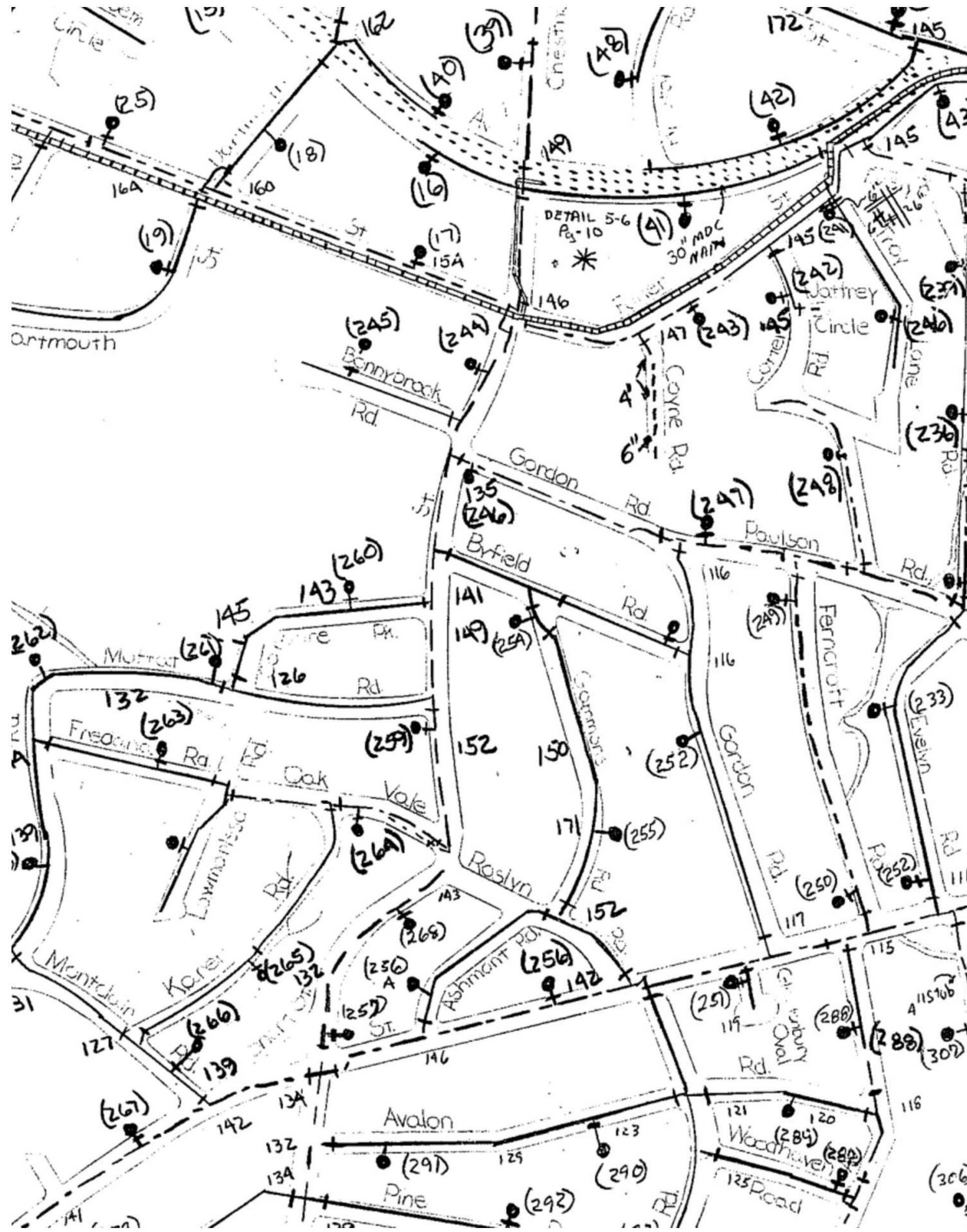


TYPICAL WATER SERVICE CONFIGURATIONS
(NOT TO SCALE)

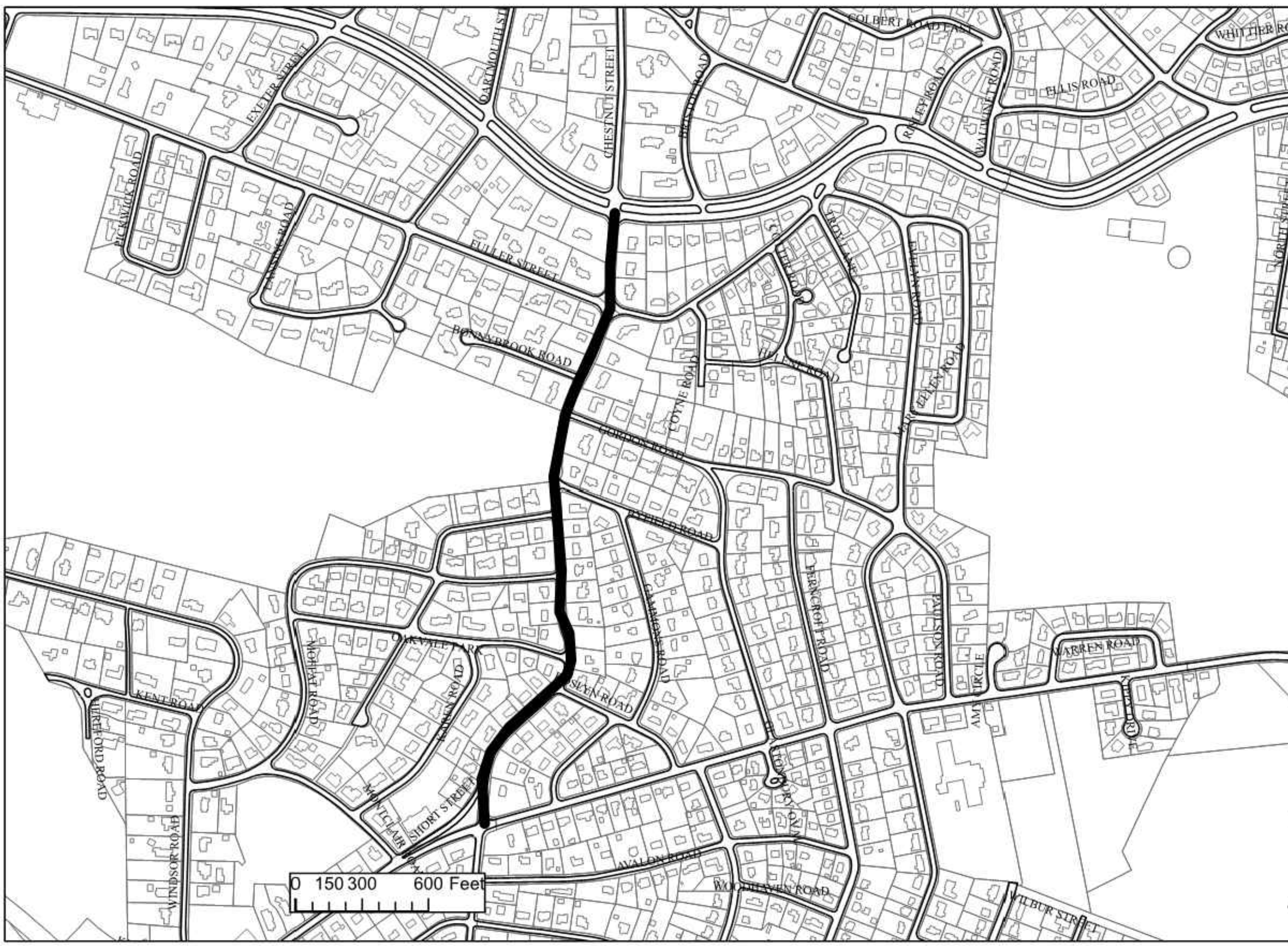


TYPICAL THRUST BLOCK CONFIGURATIONS
(WORK TO BE PERFORMED AT ENGINEERS DISCRETION ONLY)
(NOT TO SCALE)

(THE DETAILS SHOWN ON THIS SHEET ARE NOT TO SCALE)
DETAILS OF SIMILAR TYPE PUBLISHED IN THE 'GENERAL CONSTRUCTION DETAILS' ARE SUPERCEDED BY THE DETAILS SHOWN ON THESE PLANS.
FOR DETAILS NOT SHOWN ON THESE PLANS SEE 'CITY OF NEWTON GENERAL CONSTRUCTION DETAILS' WHICH CAN BE OBTAINED AT THE OFFICE OF THE CITY ENGINEER.



CHESTNUT STREET
SCALE: NONE



CHESTNUT STREET
SCALE: NONE

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ADDITIONAL GIS INFORMATION
AND ATLAS MAPS

NEWTON
MASSACHUSETTS
CHESTNUT STREET PHASE II
WATER MAIN CLEANING AND LINING

Designed By: CW/JAW
Checked By: FBH
Approved By: JMO

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