

**CITY OF NEWBURYPORT  
DEPARTMENT OF PUBLIC SERVICES**

**BID FOR**

**MERRILL STREET  
RECONSTRUCTION**

**AUGUST 14, 2013**



**CONTRACT # R13-1019**



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**INVITATION TO BIDDERS**

**CITY OF NEWBURYPORT  
DEPARTMENT OF PUBLIC SERVICES  
16A PERRY WAY  
NEWBURYPORT, MA 01950**

The **City of Newburyport** invites contractors to submit sealed bids for in accordance with M.G.L. C.30, § 39M for the following:

**MERRILL STREET RECONSTRUCTION  
Project #: R13-1019**

The scope of work under this contract includes full reconstruction of Merrill Street, approximately 800 feet, including, but not limited to, excavation of existing roadway and sidewalks, replacement of water and sewer utilities, reconstruction/installation of sidewalks with new curbing and resurfacing of traveled way. The scope of work also includes limited tree removal and replanting of trees, landscape and hardscape.

The Information for Bidder's (IFB) documents may be examined and obtained at the Newburyport Department of Public Services (DPS) Office at 16A Perry Way, Newburyport, MA between 7AM and 3PM Mon-Fri, or by calling 978-465-4464 ext. 1701, or by emailing a request to [dps@cityofnewburyport.com](mailto:dps@cityofnewburyport.com)

Sealed bids shall be submitted to the **Newburyport DPS, 16A Perry Way, Newburyport, MA 01950** clearly marked "**MERRILL STREET RECONSTRUCTION BID**" on or before **10:00 AM on Wednesday August 14, 2013**. Bids will be publicly opened and read aloud at 10:30 AM. All bids must be submitted in the format provided in the bid package. If the bid is mailed, the sealed bid must be enclosed in a second, sealed envelope for delivery. Any failure to properly enclose and mark envelopes resulting in an inadvertent opening of a bid shall be borne solely by the bidder and will result in the disqualification of the bid.

**BID BOND**

Bids shall contain a 5% Bid Deposit in the amount of 5% of the bid amount (including all alternates) in the form of a bid bond, certified check or Treasurer's check issued by a responsible bank or trust company, made payable to the City of Newburyport.

**PAYMENT BOND**

Bids shall contain a 100% Payment Bond under G.L. c. 149, § 29, for payment of all persons supplying labor and/or materials, which bond must be issued by a surety qualified to do business in Massachusetts and satisfactory to the City.

**PERFORMANCE BOND**

The Successful Bidder must furnish a 100% Performance Bond for satisfactory completion of all work, which bond shall be issued by a surety qualified to do business in Massachusetts and satisfactory to the City.

**PREVAILING WAGES**

Attention of bidders is particularly called to the requirements of prevailing wage rates to be paid under this Contract, as established by the Commonwealth of Massachusetts Department of Labor Standards. Prevailing wage rate sheets are included in the bid documents.

## OSHA

Bidders must furnish OSHA Certification and Labor Harmony Certification in accordance with M.G.L. c.30, § 39S.

MassDOT Prequalification is required in accordance with M.G.L. c. 81, § 8B. For additional information regarding the prequalification process for contractors call the Prequalification Department Hotline at 857-368-8660.

The Contract will be awarded, if at all, to the lowest responsive and responsible bidder in accordance with the bid documents and G.L. c. 30, § 39M. To the fullest extent permitted by law, the City of Newburyport reserves the right to reject any and all bids, or to award or not to award the Contract for any reason the Mayor determines to be in the City's and/or the public interest.

The estimated quantities shown in the bid documents are approximate and are for bidding and comparison purposes only and should not be assumed to be the actual amounts to be completed on this Contract. The City of Newburyport does not guarantee that these quantities will ultimately be required. By submitting a bid, each bidder agrees that any variance between actual and estimated quantities shall not be a basis of a valid claim, except as permitted, if at all, by G.L. c. 30, § 39N.

## TERMINOLOGY

The following terms, references and conventions have the meaning indicated.

<b>ALTERATION</b>	Change in the form or character of any of the work done or to be done.
<b>A.A.S.H.T.O.</b>	The American Association of State Highway and Transportation Officials.
<b>A.S.T.M.</b>	The American Society for Testing Materials
<b>AUTHORIZED REPRESENTATIVE</b>	The person or body named as such by the City
<b>CONTRACT or CONTRACT DOCUMENTS</b>	The written agreement executed between the City and the Contractor setting forth the obligations of the parties thereunder, including, but not limited to, the performance of the work, the furnishing of labor, and materials and the basis of payment. The Contract includes the Invitation to Bid, Instructions for Bidders and other Bid Documents and any addenda thereto, Bid, General Conditions (and any supplementary General Conditions), Qualification Statement, Wage Rates, Specifications, Special Provisions, Performance Bonds, General and Detailed Plans, detail sheets or sketches, any change orders and agreements that are required to complete the Construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument, and all provisions of applicable law which are deemed incorporated into the Contract by reference.
<b>BIDDER</b>	Any individual, firm or corporation submitting a bid for the work contemplated, acting directly or through a duly authorized representative.
<b>BID DOCUMENTS</b>	Advertisement for bid, Invitation to Bid, Information for Bidders, Bid Forms, General Terms and Conditions, Supplemental Conditions, Specifications, Plans, Addenda, and all other similar bid documents, and any addenda thereto
<b>CITY</b>	The City of Newburyport, Massachusetts or its authorized designee
<b>CONTRACTOR</b>	The Low Bidder with whom a Contract has been or may be executed
<b>DEPARTMENT</b>	The Department of Public Services for the City, acting by and through its Director.
<b>DESIGNEE</b>	The Director or other authorized person named if and as designated by the City
<b>DIRECTOR</b>	The Director of Public Services acting directly or through an authorized representative, such representative acting within the scope of the particular duties entrusted to him.
<b>EXTRA WORK</b>	Work which, as determined by the City: a. is not contained in or reasonably inferable from the Contract; and b. is determined by the City or its designee to be necessary or otherwise appropriate for the proper completion of the project.

<b>LAYOUT</b>	See Right-of-Way.
<b>LOCATION</b>	See Right-of-Way.
<b>LOW BIDDER</b>	The lowest responsible and eligible bidder with whom a Contract has or may be executed
<b>MATERIAL</b>	Any substance, item or material proposed to be used in connection with the construction of any integral part and/or any appurtenant part and/or any incidental part of the proposed project.
<b>PLANS</b>	The Contract Drawings, City Standards, Detail sheets, and/or sketches, or reproductions thereof, which show the nature, location, character, dimension and details of the work including but not limited to any alterations thereof permissible under the Contract and authorized by duly approved written orders.
<b>PREMISES</b>	City real property and fixtures thereon, including buildings.
<b>BID</b>	The written offer of the Bidder submitted in approved form to perform the work contemplated.
<b>R&amp;R</b>	Remove & Reset
<b>REFERENCES IN CONTRACT TO PUBLICATIONS OR STANDARDS</b>	Where reference is made in the Contract to any publications or standards issued by any association, societies or other organization, the intent shall be to specify the current edition of such publications or standards (including tentative revisions) in effect on the date of the Contract, notwithstanding any reference to a particular date.
<b>RIGHT-OF-WAY</b>	That area which has been laid out or acquired for the purposes of the proposed Contractual project.
<b>SPECIAL PROVISIONS</b>	The special directions, provisions and requirements so entitled in the Contract, including any such directions etc. prepared to cover proposed work not otherwise provided for by the specifications. These special provisions shall be included within the general term "Specifications" and shall be made a part of the Contract with the express purpose that they shall prevail over all other specifications.
<b>SPECIFICATIONS</b>	The directions, provisions and requirements contained and identified as such in the Contract pertaining to the method and manner of performing the work, or the quantities and quantities of materials to be furnished under the Contract.
<b>SUCCESSFUL BIDDER WORK</b>	The Low Bidder with whom a Contract has been or may be executed



**CERTAIN WORDS**

The words “As directed”, “as permitted”, “as required” or words of like effect shall mean that the direction, permission or requirement of the City is intended, and similarly the words “approved” “acceptable”, “satisfactory”, or words of like import shall mean approved by or acceptable or satisfactory to the Director, unless otherwise provided herein. The words “necessary”, “suitable”, “equal” or words of like import shall mean necessary, suitable or equal in the opinion of the Director. The words “complete in place” shall mean the inclusion of all work, including incidentals, mentioned or implied in the Specifications and on the plans, or work that may reasonably be inferred as necessary to the proper execution of the item, unless payment for any portion of the work is otherwise specifically provided for.

**OWNER**

The City of Newburyport, Massachusetts, acting by and through its Mayor.

**ENGINEER**

The City Engineer of the City of Newburyport, Massachusetts, or authorized agent or officer.

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## GENERAL INFORMATION/REQUIREMENTS

### **1. INTRODUCTION**

a. The **City of Newburyport** is a municipal government. The City of Newburyport Department of Public Services is administering this bidding process and contract.

### **2. QUANTITIES**

a. This Information for Bid (IFB) employs estimated quantities that may or may not be purchased during the contract term. The City reserves the right to exceed or not meet the estimated quantities as its needs dictate. Estimated quantities will be used for comparison of bids only, determining the Low Bidder and establishing the Bid Bond/Deposit Labor and Materials and Performance Bond amounts. The successful bidder shall have no claim on account of any variance between estimated and actual quantities except as may be provided, if at all, by G.L. c. 30, § 39N.

### **3. PRE-BID CONFERENCE**

a. No pre-bid conference will be held for this IFB.

### **4. BIDDER ELIGIBILITY**

a. Bidder must comply with all requirements of this IFB in order to be considered eligible for award.

b. **City of Newburyport** reserves the right to accept or reject any and all bids or portions thereof, to waive any informality in bidding to the fullest extent permitted by law.

### **5. AWARD**

a. The **City of Newburyport** will award a contract, if at all, to the responsible and responsive bidder offering the lowest price as indicated on the item-specific **Bid Price Forms**.

b. **Lowest Price will be determined by adding the sub-totals for all separate items of work and selected alternates, if any, unless otherwise indicated on the Bid Form. Alternates, if any, shall be selected, if at all, in the sequence in which they appear in the Bid Documents.**

### **6. CONTRACTS**

a. If awarded, the Contract resulting from this IFB will be made by and between the Low Bidder and **The City of Newburyport**.

b. **Contract shall be completed within 365 days from the date of award.**

c. All general requirements and terms and conditions contained in the Bid Documents shall be deemed a part of and contained by reference in any resulting Contract.

d. Low Bidders are required to certify at the time of contract execution, using the form included in the Bid Certification Section, among other things, that they have met all Massachusetts tax obligations of eligibility with member municipalities.

### **7. APPLICABLE LAWS AND CERTIFICATIONS**

a. This Invitation for Bids (IFB) is a procurement issued by the City of Newburyport pursuant to M.G.L. c.30, s.39M.

b. Municipal governments are exempt from Massachusetts sales tax and U.S. excise tax.

c. Prevailing wages for this work are established by the Commonwealth of Massachusetts Division of Labor Standards, and are set forth in the WAGE RATES Section of the Contract Documents.

d. The Low Bidder must, at or after Contract execution, as applicable, provide proof of possession, in good standing, of all applicable licenses and must obtain, prior to performing contract work, all permits required by the City for the work unless waived by the appropriate issuing authority.

## **8. MISCELLANEOUS**

- a.** Attention of all bidders is directed to all applicable Sections of the General Laws of the Commonwealth of Massachusetts, and Municipal Ordinances and by-laws, as most recently amended, which govern the award of this Contract. They will be deemed to be included in the Contract the same as though written out in full.
- b.** No Bid received after the closing time and date established in the INVITATION TO BID for the receipt of bids will be considered, regardless of the cause for delay in the receipts of such bids.
- c.** Any bidder may modify his bid at any time prior to the scheduled closing time for receipt of bids provided such is received by the CITY prior to the closing time, and provided further that the final prices or terms will not be disclosed to the CITY until the sealed bid is opened.
- d.** Any bid may be withdrawn at any time prior to the scheduled closing time for receipt of bids. No bidder may withdraw a bid within 30 days (Saturdays, Sundays and holidays excluded) after the actual date of the opening thereof.
- e.** Bidders must thoroughly examine the bid and Contract Documents, including all addenda and requirements for certificates of insurance, bonds, etc. Failure of any bidder to acquaint themselves with the bid and Contract Documents shall in no way release that bidder from the obligations with respect to his/her bid.
- f.** To the fullest extent permitted by law, the City reserves the right to make such investigations as it deems necessary to determine the ability of the bidders to perform the work. The bidders shall furnish to the City all such information and data for this purpose as the City may require. The City reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the City that such bidder is responsible and eligible to carry out and to complete the work of the Contract. Bidders are required to submit a completed qualification statement on the attached Qualification and Reference Statement.
- g.** The Contract will be awarded, if at all, within 30 days (Saturdays, Sundays and legal holidays excluded) to the lowest responsible and responsive qualified bidder and whose bid complies with the Conditions set forth in the Contract Documents. In determining RESPONSIBILITY AND ELIGIBILITY, the prospective Contractor must submit references as specified in Section RECORD OF CONTRACTORS PERFORMANCE. The submittal of this section is MANDATORY and shall be included with Bid Packet. However, the City reserves the right to accept such form after receipt of bids.
- h.** The LOWEST TOTAL PRICE shall be determined by adding all items as shown in the Bid Form. NOTE: THE SPECIFIED QUANTITIES ARE ESTIMATES OF REQUIREMENTS FOR USE IN COMPARING BIDS; THE CITY OF NEWBURYPORT DOES NOT GUARANTEE THAT THESE QUANTITIES WILL ULTIMATELY BE REQUIRED.
- i.** In the event there is a discrepancy in the Form of General Bid between the prices written in words and the price written in figures, the lowest price shall govern.
- j.** In the event of a tie, lowest bidder will be determined by a coin toss with all bidders having been given an opportunity to be present at the coin toss.
- k.** In determining RESPONSIBILITY and ELIGIBILITY, the City will, among other things, require the prospective Contractor to provide bonds and insurance required by the Contract agreement for the period(s) of the Contract, and will investigate the Contractor's performance on other Contracts.
- l.** Work under this Contract is subject to the limit of appropriated funds. Work is "AS REQUIRED" by the City.
- m.** The City of Newburyport, acting through its Mayor, reserves the right to award the Contract, or to reject any and all bids if it is in the public interest to do so to the fullest extent permitted by law.

- n.** By submitting his/her bid, the bidder agrees to execute the Contract, provide insurance certificates and bonds, and to commence work within the time limits stated in the Contract Documents. In the event the successful bidder fails or neglects to execute the Contract and provide certificates and bonds in the prescribed time, the City, at its sole option, may determine that the bidder has abandoned the Contract, that his/her Bid and acceptance are null and void and that his/her bid security has been forfeited to the City,. The City may cancel the award to that bidder and re-award the Contract to another.
- o.** No “joint venture” bids will be accepted.

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**INSTRUCTION REGARDING BID SUBMISSION**

**1. BID REQUIREMENTS**

a. Bids must be submitted in a sealed envelope prior to **10:00 AM on Wednesday, August 14, 2013**. Send bids to the following address:

**CITY OF NEWBURYPORT  
DEPARTMENT OF PUBLIC SERVICES  
16A Perry Way  
Newburyport, MA 01950**

b. All Bid envelopes must be clearly marked on the outside as follows:

**MERRILL STREET RECONSTRUCTION  
Project #: R13-1019**

**Submitted By:** \_\_\_\_\_ **Company Name** \_\_\_\_\_

**Date:** \_\_\_\_\_

c. Bids must be submitted on the accompanying applicable **Bid Form**. Bids must be marked with a unit price, an extended price, subtotal (if applicable) and total price for the item(s) listed in the Bid Form. Where a bid item (shown as an integer item number with a bold border and a blank in the *Total* column) is composed of sub-items (shown as a decimal item number with a blank in the *Sub-Total* column) each subtotal blank must be filled out. **Failure to fill out all sub-items will result in the rejection of the bid for that item.**

d. Bids must be signed and dated by an authorized representative of the Bidder and accompanied by proof of authorization (e.g. certificate of corporate vote, corporate seal, etc.) when representing a business entity other than a sole proprietorship. A form is included in the Bid Documents for this purpose.

e. Bid Packets must contain the following documents filled out, signed and dated as required:

1. **5% Bid Bond** (in acceptable form)
2. **Bid Form**
3. **Record of Contractor's Performance**
4. **Record of Contractor's Equipment**

f. Prices as Bid shall remain firm for the term of the initial Contract and any subsequent extensions and for all work in the categories bid regardless of a municipality's work quantities. However, bid prices applicable to the extension periods may be lowered by agreement of the parties.

g. Low Bidder shall process and deliver the required Contract within seven (7) working days of receipt of notification by the City of their "Intention to Award" the Contract.

**2. BONDS**

a. **Bid Bond - Bid documents must be accompanied by a 5% Bid Bond** in the form of a Bid Bond, cash, treasurer's or certified check issued by a responsible bank or trust company **in the amount of 5% of the total bid price, including all alternates, if any**. Bid Bonds must remain in effect for a period of not less than 60 days after the bid opening and will be returned to all unsuccessful bidders upon execution of a letter committing them to contract with the City of Newburyport based on the need and timing as determined by the City.

b. **Payment Bond** - The Successful Bidder must furnish a Payment Bond of not less than 100% of the amount of the Contract for satisfactory surety of the completion of the work.

c. **Performance Bond** - The Successful Bidder must furnish a Performance Bond of not less than 100% of the amount of the Contract for satisfactory surety of the completion of the work.

**3. INSURANCE**

**a.** Low Bidders shall be required to provide Insurance Certificates as part of the Contract documents demonstrating that the following forms and limits are in effect during the term of the Contract.

**General Liability**

– Comprehensive form Including	Aggregate	\$3,000,000
– Premises/Operations	Each Occurrence	\$1,000,000
– Underground Explosion & Collapse Hazard		
– Independent Contractors		
– Broad Form Property Damage		
– Products/Completed Operations	Aggregate	\$3,000,000
– Personal Injury	Per Person	\$5,000
– Fire Damage	Each Occurrence	\$50,000

**Automobile Liability**

– All Owned Vehicles	Combined	\$1,000,000
– Hired Vehicles		
– Non-owned Vehicles		

**Workers Compensation & Employers Liability**

– As Required by State Statute	Each Accident	\$100,000
	Bodily Injury by Disease (Policy Limit)	\$500,000
	Bodily Injury by Disease (Each Employee)	\$100,000

**Professional Liability Insurance**

Minimum Coverage	Each Occurrence	\$1,000,000
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**b.** Municipality shall be named as Additional Insured's and shall be provide with copies of actual policies upon request.

**c.** All insurance coverage's shall be in force from the time of execution of the Agreement to the date when all work under the contract is completed and accepted by the Municipality. Contractors shall notify the Municipality should coverage become unavailable or if its policy should change.

**d.** Certificates and any and all renewals substantiating that required insurance coverage is in effect shall be filed with the contract. Any cancellation of insurance, whether by the insurers of by the insured, shall not be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the Municipality at least 15 days prior to the intended effective date thereof, which date should be expressed in said notice.

**4. INDEMNIFICATION**

**a.** Contractors shall indemnify, defend, and save harmless the Municipality, and all of its officers, agents, and employees against all suits, claims of liability of every name and nature, for or on account of any damages, liabilities, losses, injuries to persons, and damage to property arising out of the Contractor's performance of the work covered by this Agreement and/or failure to comply with terms and conditions of this contract, whether by himself or his employees or subcontractors.



## **GENERAL TERMS AND CONDITIONS**

### **1. TERMS AND CONDITIONS**

a. The following Terms and Conditions are in addition to and not a limitation of the provisions of the signed Agreement between the City and successful bidder, a copy of which is included in these Bid Documents. In the event of any conflict in and among the within Terms and Conditions and the provisions of the Agreement, the provisions most favorable to the City, and the provisions allowing for the greater quantity or better quality of goods and services, shall Control.

### **2. NORMAL HOURS OF WORK**

a. Normal Hours of Work shall be between the hours of 7:00 AM and 4:00 PM Monday through Friday, unless otherwise approved by the Director or their Representative. Work shall not be performed on Saturdays, Sundays, Holidays or other than during Normal Hours of Work without express authorization from the City's Authorized Representative as identified in the Contract documents.

b. If the Contractor elects to work outside Normal Hours of Work, and the necessary permission is secured from the Director, the cost of inspection or support from City personnel of the work shall be borne by the Contractor and payment for same shall be deducted from his Contract payments at the rate as paid by the City.

c. The Director will assign inspectors to the project as are in his opinion necessary for the proper supervision of the work.

### **3. TRAFFIC SAFETY**

a. Police details will be scheduled and paid for by the contractor unless otherwise specified.

b. The Contractor shall be responsible to contact the NPD prior to the start of any work. If determined by the DPS or NPD that a police officer(s) is required, the Contractor shall arrange for a police detail at least 24-hours in advance of the start of work.

c. Contractors that cancel scheduled work to which police, or public works personnel are assigned on an additional pay basis are subject to contract back charges for costs incurred at the discretion of Municipality.

d. The Contractor shall be responsible to sign and collect and pay for any and all details.

e. The actual payment to the NPD will be made directly from the Contractor.

### **4. SCHEDULES AND DEADLINES**

a. Start and Finish Work: Contractors shall be available to begin work at locations designated by the City no later than ten (10) business days from the date of execution of a Contract or on a schedule approved by the Participating Municipality. Once work has been started, Contractors shall remain on the job until all scheduled work is completed to the satisfaction of The Municipality.

b. Presence Known to Municipality: All work must be scheduled in advance and performed with the knowledge and consent of the Municipality. Contractors may not perform work within The Municipality absent such knowledge and consent.

c. Timeliness and Approved Delays: Time shall be of the essence regarding performance of each and every portion of the contracted work. Work schedules approved by the Municipality shall be binding upon the Contractor except for reasonable delays due to weather, failure of the Municipality in the timely performance of any of its prerequisite obligations, or site-related circumstances beyond the control of the Contractor. Extensions of time resulting from such delays are subject to approval by the Municipality and may not be unreasonably withheld.

d. Request for Service, Response, Failure to Respond: The Municipality may issue a formal written "Request for Service", calling for performance of the contracted work pursuant to a stated schedule, or for the establishing of a work schedule. Such "Request for Service", may be

conveyed by e-mail, telephone, FAX, courier, or U.S. Postal Service. Contractors shall respond to the Municipality within twenty-four (24) hours through an employee authorized to commit the Contractor. Failure to meet these obligations may subject Contractors to penalties of an assignment in the amount of \$250 per day of non-compliance beyond a period of 24 hours after receipt of a written warning. Continued non-compliance may subject Contractors to loss of the contract and liability for the costs incurred for use by the Participating Member Municipality of the next lowest bidder.

**e. Performance of Work:** The contractor shall commence work in a timely manner and in no instance shall it not begin within fifteen (15) working days from the submission of the “Request of Service” unless agreed upon by the Director or his designee. The Contractor will also be required to continue with this work uninterrupted until complete. Failure to comply may result in penalties as described in *General Terms and Conditions Section 3.d*.

**f. Failure to Appear for Scheduled Work:** In addition to the penalties noted in the *General Terms and Conditions Section 3.d*. Contractors that fail to appear for or cancel scheduled work to which police, or public works personnel are assigned on an additional pay basis, will be subject to contract back charges for costs incurred at the discretion of The Municipality. Such changes may include preparation by others that are required to be repeated.

**g. Engaging the Next Lowest Bidder:** The Municipality may, upon failure of the Low Bidder to execute a Contract and provide all bonds and other required information, engage the services of the next lowest bidder at his price as bid.

## **5. LEGAL DAMAGES**

**a.** If Contractors neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereby granted by the City, then Contractors hereby agree, as part consideration for the awarding of this Contract, to pay to the Municipality the amount of \$500 per day, not as a penalty but as liquidated damages for such breach of Contract as hereinafter set forth, for each and every calendar day that the Contract shall be in default after the time stipulated in the Contract for complete the work.

**b.** The said amount is fixed and agreed upon by and between Contractors and The City because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages The City would in such event sustain, and said amount is agreed to be the amount of damages which The City would in such event sustain, and said amount is agreed to be the amount of damages which The City would sustain and said amount shall be retained from time to time by The City from current periodical estimates.

## **6. TERMINATION FOR CAUSE**

**a.** This Contract may be terminated for cause due to unsatisfactory performance, after written warning and an opportunity for Contractors to correct the subject performance, or without penalty or liability due to the absence of a municipal appropriation for the type of work for which the contract is made.

## **7. INVOICING & PAYMENT**

**a.** Payment for services will be made no more frequently than monthly. Contractor is responsible for timely submission to CITY.

**b.** Pricing shall be based on unit (or other) prices as bid in the contract.

**c.** Invoices shall clearly indicate quantities, hours, location, prices and other applicable measures that can be verified by The City on the basis of documented weight, service or delivery slips provided at the time work was performed or delivery/pick-up occurred.

**d.** Estimates upon work done, which is of such a nature or so situated as to be for any reason still in danger of injury or failure, may be withheld until the next estimate after the work is in a satisfactory condition. In preparing estimates the material delivered on the site may be taken into consideration.

e. Payments for units of construction will not be made until the whole process of construction as described herein has been completed.

f. Payment Requisitions shall be submitted in draft form i.e. "pencil requisition" to the CITY prior to formal submission.

**8. MISCELLANEOUS**

a. Terms, conditions and requirements contained in the Drawings or Specifications peculiar to specifications for named types of work shall supersede those contained in the "GENERAL INFORMATION" section of this IFB.

b. Contractor must make best diligent efforts to coordinate scheduled work with City.

c. Contractor shall complete all work of a continuous nature scheduled and called for by the City prior to leaving the worksite or the City unless so authorized by the Member.

d. In the event the City loans equipment of any kind, it is required to be returned in equal or better condition at the conclusion of use.

e. Where a conflict in requirements is apparent between *Section A: General Terms and Conditions* and the *Section B: Specifications*, the Specifications shall control.

**9. INSPECTION AND TESTING**

a. The Director and his agents will make observations of the work for the benefit of the City, not the Contractor. They shall have access to the work, and be allowed to inspect all work. The Director's (and his agent's) observations of and access to the work or lack thereof shall not relieve the Contractor from its obligations under the Contract or impose any obligations on the City to notify the Contract with respect to the results of such observations and access.

b. The Director and his agents reserves the right to inspect or check any of the work, and the Contractor shall not claim added compensation for any delay occasioned by the Director exercising this right, nor for any corrective work which the Director orders as a result of the Contractor's errors. The Contractor shall be responsible for preserving the control points provided by the Engineer throughout the life of the project, and shall accurately replace any such point, which is damaged or moved at his own expense. The Director's (and his agent's) inspections of the work or lack thereof shall not relieve the Contractor from its obligations under the Contract or impose any obligations on the City to notify the Contract with respect to the results of such observations and access.

c. All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the owner. The Owner will pay for all laboratory inspection services directly, and not as part of the Contract, unless otherwise expressly provided for in the Contract Documents.

d. Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish for uses intended.

**10. PROTECTION OF ABUTTING PROPERTIES**

a. The Contractor shall be responsible for protecting his own work and all nearby abutting properties from damage resulting from his performance of the Contract. He shall pay particular attention to trees, shrubs, laws, steps, walks, etc. abutting the work and shall save them from damage and harm. If through, negligence or carelessness or otherwise, the Contractor damages such trees, shrubs, etc. an amount equal to the damage done shall be deducted from his payment. Such reduction shall be determined by the Director and shall be final and binding.

b. The Contractor is responsible to see that his equipment, tools, materials, and men shall not be placed on or allowed to overrun into abutting private properties.

**11. PERMITS**

a. The Contractor shall obtain all required permits, licenses, certificates and inspections, both permanent and temporary, and shall make all necessary arrangements with Utility Companies to properly prosecute the work, and shall send all notices to Utilities as are required by the General Laws of Massachusetts.

**12. CHANGES IN THE WORK**

a. The City, without invalidating the Contract, may order extra work or make changes by altering, adding to, or deducting from the work and the Contract sum shall be adjusted accordingly. All such work shall be executed under conditions of the original Contract except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.

b. In giving instruction, the Director shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise no extra work or change shall be made unless in pursuance of written order signed by the Director and no claim for an addition to the Contract sum shall be valid unless so ordered.

c. All Proposed Change Orders shall be submitted in writing prior to any work being conducted. Failure to obtain formal Change Orders may affect payment.

**13. CORRECTION OF WORK AFTER FINAL PAYMENTS**

a. Neither the final certificate, nor payments, nor any provision in the Contract shall relieve the Contractor of responsibility for faulty materials or workmanship, any defects, omissions or mistake of the Contractor or his employees, and he shall remedy any defects due thereto, and pay for any damage to any work resulting therefrom, which shall appear within a period of one (1) year from the date of successful completion and beyond, limited only by applicable statute(s) of limitations, if any.

**14. MATERIAL HANDLING, STORAGE AND CLEANUP**

a. The Contractor shall, at his own expense, handle and haul all materials furnished by him and shall remove any of his surplus materials at the completion of the work. The Contractor shall provide suitable and adequate storage for equipment and materials furnished by him that are liable to injury and shall be responsible for any loss of or damage to any equipment or materials by theft, breakage, or otherwise. The Contractor shall be responsible for all damage to the work under construction during its progress and until final completion and acceptance even though partial payments have been made under the Contract Unless permission to close the street is received in writing from proper authority, all excavation material shall be placed so that vehicular and pedestrian traffic may be maintained at all times.

b. The Contractor expressly undertakes at his own expense:

- (1) to take every precaution against injuries to persons or damage to property;
- (2) to store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other Contractors;
- (3) to place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work;
- (4) to clean up frequently all refuse, rubbish, scrap materials and debris caused by his operations, to the end that at all times the site of the work shall present a neat, orderly and workmanlike appearance;
- (5) before final payment to remove all surplus material, false work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition; and

(6) to effect all cutting, fitting or patching of his work required to make the same to conform to the plans and specifications and, except with the consent of the Engineer, not to cut or otherwise alter the work of any other Contractor.

c. The Contractor shall at all times keep the adjacent properties free from an accumulation of waste material or rubbish caused by his employees or work, and at the completion of the work he shall remove all rubbish, tools, equipment and materials from the adjacent properties and highways and shall leave his work "Broom Clean."

#### **15. RESIDENT ENGINEER**

a. The Contractor shall designate an employee to act as resident engineer at the site of the work and shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the Engineer and shall be one who can be continued in that capacity for the particular job involved unless he/she ceases to be on the Contractor's payroll.

#### **16. COMPETENCY OF BIDDER**

a. The Contractor will be awarded only to a responsible and eligible bidder who is experienced and capable of performing the type of work entailed. Only reputable established companies will be accepted as responsible bidders. The low bidder will be required to show proof that he/she has sufficient equipment, equipment operators and a sufficient number of qualified and experienced employees to properly and efficiently accomplish the proposed work. Contractor shall also furnish proof of his financial ability to start, operate and complete the work.

#### **17. SURVEY INFORMATION**

a. The Engineer may furnish basic information pertaining to layouts, benchmarks, etc. sufficient for controlling the location and grades of the work, but Contractor shall be responsible to verify the accuracy and correctness of this information to its satisfaction. The Contractor shall, at his own expense, furnish all necessary equipment, personnel, stakes, etc. and shall lay out the work in detail, as required, including lines and grades as necessary in each instance. All reference marks shall be verified by an instrument at frequent intervals and the Contractor shall be responsible for the accuracy of all lines and grades relative to the project.

b. The Contractor shall be responsible for the correct location and elevation of all components of the project as shown on the Contract Drawings.

c. All measurements and grades on the Contract Drawings shall be field verified by the contractor.

#### **18. USE OF EXPLOSIVES**

a. When the use of explosives is necessary for the execution of the work, the Contractor shall observe the utmost care not to endanger life and property, and whenever directed, the number and size of the charges shall be reduced. All explosives shall be stored in a secure manner and all such storage places shall be clearly marked "DANGEROUS EXPLOSIVES" and shall be in the care of competent watchmen at all times.

b. The use of explosives will be limited to between the hours of 9:00 A.M. and 3:30 P.M. unless express permission in writing is received from the Engineer. The method of storage, use and handling explosives and highly inflammable materials shall conform to all State Laws and regulations pertaining thereto. The Contractor shall obtain all necessary permits relating to the storage and uses of explosives.

c. Contractor agrees by submitting a bid and signing the Contract that is shall be strictly liable for all damages resulting from the use of Explosives.

#### **19. BARRICADES, WARNING SIGNS, SAFETY AND TRAFFIC CONTROL**

a. All roadways on which work is being accomplished shall be kept open to local traffic at all times except when specified detours are authorized, in writing, by the Director of Public Services or his/her designee.

- b.** It shall be the Contractor's responsibility to provide all detour and applicable construction signs that are clearly readable and permanent insofar as the duration of the work on each street is concerned.
- c.** The Contractor shall leave the site accessible from either end as to allow access for fire department vehicles and residents. Contractor shall also notify the police and fire departments at the close of each working day as to the project location and area conditions.
- d.** Where work is performed on or adjacent to any roadway, driveway, right-of-way, or public place, the Contractor shall provide, at his/her own expense, all barricades, fences, lights, warning signs, danger signals, watchmen, and shall take other precautionary measures for the protection of persons or property and of the Work.
- e.** Barricades, cones and other devices shall meet ANSI and MUTCD guidelines.
- f.** From sunset to sunrise, Contractor shall furnish and maintain all lights necessary to protect the Work from traffic, pedestrians and animals, and vice versa. Sufficient barricades shall be erected to keep vehicles accessing the Work under construction. Contractor's responsibility for the maintenance of barricades, fences, signs and lights shall continue until the Project is accepted by Owner.
- g.** All open excavations shall be adequately safeguarded by providing the necessary temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The length of open trench will be controlled by the particular surrounding conditions but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, special construction procedures such as limiting the length of open trench, prohibiting stacking excavated material in the street, backfilling, and or restricting working hours shall be taken as specified by the Engineer.
- h.** The Contractor shall, at his own expense, provide suitable and safe means for completely covering all open excavations and for accommodating travel when work is not in progress. Bridges provided for access to private property during construction shall be removed when no longer required.
- i.** The Contractor shall be held responsible and liable for all damage to the work due to any failure of signs and barricades to protect the work properly from traffic, pedestrians, animals or other causes.

**20. AUTHORITY AND DUTIES OF DIRECTOR'S ASSISTANTS**

- a.** The Director may appoint such assistants and representatives as he deems necessary and they shall be authorized to inspect work and materials, to give directions pertaining to the work or the safety and convenience of the public, to approve or reject materials and workmanship, to make measurements of quantities and to perform such other duties as may be designated by the Director.
- b.** In case of any dispute arising between the Contractor and the Director's assistants, as to materials furnished or the manner of performing the work, the Director's assistants shall have the authority to reject the materials or to suspend the work until the question at issue can be referred to and decided by the Director.
- c.** Director's assistants are not authorized to revoke, alter, enlarge, relax, or release any requirements of the Contract and specifications, nor to issue any instructions contrary to the plans and specifications. They shall in no case act as foreman for or perform other duties for the Contractor.

**21. SUBLETTING OR ASSIGNMENT OF CONTRACT**

- a.** The Contractor shall give his best personal attention constantly to the faithful execution of the work, shall keep the same under his personal control, and shall not assign by power of attorney or otherwise or sublet the work or any part thereof without the previous written consent of the CITY and shall not either legally or equitably or collaterally assign any of the moneys payable under

this agreement, or his claim thereto, unless by and with the written consent of the CITY. He shall be responsible for the acts and omissions of his agents and subcontractors, if any, and of all persons directly or indirectly employed by him or them in connection with the work.

**b.** The Contractor shall notify the Director, as soon as practicable after the execution of the Contract, the name and address of each subcontractor, his duties, and such other information the Director may require in order to ascertain whether the subcontractor is reliable and able to perform the work. Notwithstanding anything to the contrary in the Contract Documents, the Director's actions or omissions in connection with such inquiry shall under no circumstances constitute an "approval" of a subcontractor for the purpose of G.L. c. 30, § 39F or relieve Contractor of its responsibility for any and all subcontractors.

**c.** The CITY will make a periodic pay estimate for the Contractor only, regardless of the fact that the Contractor employs one or more subcontractors. It shall be the Contractor's responsibility to determine the amount of work that is payable to his subcontractors and the City frees itself of all such responsibility.

## **22. MEASUREMENT OF QUANTITIES**

**a.** The quantities of the various items of work performed and to be paid for by the City shall be determined by the Director.

**b.** Upon the completion of the work and before final payment is made the Director will make final measurement to determine the quantities of the various items of work performed, as the basis for final settlement, and such measurement shall be final and binding on the Contractor. All measurements shall be made according to the United States Standard units of measurement.

## **23. PROTECTION OF UTILITIES**

**a.** The Contractor shall be responsible to notify all required utility companies prior to commencing any work, giving said companies at least seventy-two (72) hours' notice (exclusive of Saturdays, Sundays and legal holidays), but not more than 30 days. The Contractor shall be bound to all the laws and rules of Dig Safe (888) 344-7233. The Newburyport Water Departments requires (72) seventy-two hours advance notification for utility markouts. (978)465-4420.

**b.** The Contractor shall exercise extreme care during excavation of trenches so that utilities, underground or overhead, shall not be damaged. Utilities shall include, but not be limited to, all wires, pipes, poles, manholes, catch basins, conduits and allied items. The Contractor shall assume full responsibility for the damages and shall pay for or repair all damages thereto however made to the satisfaction of the agency having jurisdiction.

## **24. MAINTENANCE OF DRAINAGE FACILITIES**

**a.** All existing drainage facilities including, but no limited to, brooks, streams, canals, channels, ditches, culverts, catch basins and drainage piping shall be adequately safeguarded so as not to impede drainage in any manner whatsoever. The Contractor will ensure that no obstruction to, siltation of, or discharge of wastewater into existing drainage facilities occurs. If the Contractor damages or impairs through circumstances beyond his control any of the aforesaid drainage facilities, he shall repair the same within the same day.

**b.** Contractor shall be responsible for erosion control on the site to include but not limited to; hay bales, silt fence, and other measures to prevent sediment from running off site or onto abutting properties

## **25. CONSTRUCTION MACHINERY**

**a.** Construction machinery used shall be of such kind and used in such a manner and in such locations as not to unnecessarily injure road surfaces, fences, poles, trees, shrubs, buildings, walks, pipes, conduits, cables, wires, catch basins, manholes, etc.

b. The Contractor shall use small type construction machinery where the physical aspects of the site do not provide sufficient room for maneuvering a larger machine in a normal manner without damage to abutting properties.

**26. DAMAGE SUITS AND CLAIMS**

a. The Contractor shall compensate the Owner for all damages of any nature arising out of the Contractor's work, and the Contractor shall indemnify, defend and hold harmless the Owner and the Engineer and their agents and employees against all suits, claims or liability of every name and nature and from all claims arising out of or in consequence of the acts of the Contractor in the performance of the work covered by the Contract or Contractor's failure to comply with the terms and conditions of the Contract, whether by the Contractor or his agents, employees, or subcontractors, and whether or not such claims, demands, suits, or proceedings are just, unjust, groundless, false or fraudulent, including but not limited to claims for or on account of any injuries to persons or damage to property or nuisances or trespasses; and the Contractor shall and does hereby assume and agrees to pay for the defenses of all such claims, demands, suits and proceedings. This section shall apply to "Extra Work" and all other operations by the Contractor in connection with this Contract.

**27. WEATHER CONDITIONS**

a. In the event of temporary suspension of work, or during inclement weather, or whenever the Engineer shall direct and as may be required by law, the Contractor will, and will cause his Subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the Engineer, any work or materials have been damaged or injured by reason of failure on the part of the Contractor or his Subcontractors to protect his or their work, such materials shall be removed and replaced at the expense of the Contractor.

**28. REJECTED MATERIALS AND DEFECTIVE WORK**

a. Materials furnished by the Contractor and condemned by the Engineer as unsuitable or not in conformity with the specifications shall be forthwith removed from the work by the Contractor, and shall not be made use of elsewhere in the work. Any errors, defects or omissions in the execution of the work or in the materials furnished by the Contractor, even though they may have been passed or overlooked or have appeared after the completion of the work, discovered at any time before the final payment is made hereunder, shall be forthwith rectified and made good by and at the expense of the Contractor and in a manner satisfactory to the Engineer. The Contractor shall reimburse the Owner for any expense (including attorneys' and engineering fees), losses or damages incurred in consequence of any defect, error, omission or act of the Contractor or his employees, as determined by the Engineer, occurring previous to the final payment.

**29. SANITARY REGULATIONS**

a. Sanitary conveniences for the use of all persons employed on the work, properly screened from public observation, shall be provided in sufficient numbers in such manner and at such locations as may be approved. The contents shall be removed and disposed of in a satisfactory manner, as the occasion requires. The Contractor shall rigorously prohibit the commission of the nuisances within, on or about the work. Any employees found violating these provisions shall be discharged and not again employed on the work without the written consent of the City. The sanitary convenience specified above shall be the obligation and responsibility of the Contractor.

**30. IMPLICATION OF THE WORDS "APPROVED EQUAL" OR "APPROVED SUBSTITUTE"**

a. Subject to G.L. c. 30, § 39M(b): The use of the words "Approved Equal" or "Approved Substitute" following the name of any manufacturer, vendor proprietary product shall be understood to mean that articles or materials may be substituted which, in the opinion of the Director, are equal in quality, durability, appearance, strength, design and performance to the articles or materials named or described and will perform adequately in providing a first-class facility. If articles or materials are accepted as equal to those on which dimensions on the



drawings are based, any dimensional variance from those shown and/or specified shall be shown on the shop drawings prepared by the Contractor, illustrating the manner in which conformity to dimensions and design is to be obtained. All such drawings shall be subject to the approval of the Director and the installation of the article shall not proceed without first obtaining said approval.

**31. WATER FOR CONSTRUCTION PURPOSES**

a. In locations where water is in sufficient supply, the Contractor may be allowed to use water without charge for construction purposes. Any city water supply to be used shall be metered and shall have the appropriate backflow device. All usage of city water must be handled through the DPS Water Division. The express approval of the Owner shall be obtained before water is used. Waste of water by the Contractor shall be sufficient cause for withdrawing the privilege of unrestricted use.

**32. PROTECTION OF LIVES AND HEALTH**

a. In order to protect the lives and health of his employees under this Contract, the Contractor shall comply with all applicable laws and regulations, including, but not limited to, the United States Department of Labor Occupational Safety and Health Act and all amendments thereto, all state regulations (including 520 CMR 14.00, Excavation and Trench Safety), and pertinent provisions of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. , and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. He alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage, which may result from their failure or their improper construction maintenance, or operation.

**33. SUBSURFACE CONDITIONS FOUND DIFFERENT**

a. Should the Contractor encounter sub-surface and/or latent conditions at the site materially differing from those shown on the Plans or indicated in the Specifications, he shall immediately give notice to the Engineer of such conditions before they are disturbed. The Engineer will thereupon promptly investigate the conditions and take such action as he deemed appropriate and as may be required by law.

**34. SUSPENSION OF WORK**

a. The Director shall have the authority to suspend the work wholly or any part thereof, for such period as he may deem necessary, because of unsuitable weather conditions, for the safety and convenience of the public, or for such other causes as are considered unfavorable for the satisfactory completion of the work, or for such time as he may deem necessary due to the failure of the Contractor to carry out orders given or to perform any provision of the Contract. The work shall be resumed when conditions so warrant or deficiencies have been corrected and the conditions of the Contract satisfied as ordered or approved by the Director.

b. Except as may be required by G.L. c. 30, § 390, the Contractor shall not be entitled to make or assert claim for damage by reason of any delays; and as to delays beyond the control of Contractor, time for completion of the work may be extended to such reasonable time as the Owner may determine will compensate for time lost by such delay with such determination to set forth in writing, and this shall be Contractor's sole remedy for any such delay.

**35. EXTENSION OF TIME**

a. When extra work is ordered at any time during the progress of the work, which requires in the opinion of the Engineer an unavoidable increase of time for the completion of the Contract, a corresponding extension of the time of completion will be allowed, subject to prior approval of the Owner.

**36. ABANDONMENT OF WORK**

a. If the work to be done under this Contract shall be actually or constructively abandoned, or if this Contract or any part thereof shall be so abandoned, or if this Contract or any part thereof shall be assigned or sublet without the previous written consent of the Owner, or if the Contract or any claim thereunder shall be assigned by the Contractor otherwise than as herein specified, or if any time the Engineer shall be of the opinion that the conditions herein specified as to the rate of progress are not fulfilled, or that the work or any part thereof is unnecessarily or unreasonably delayed, or that the Contractor has violated any of the provisions of the Contract, the Owner may notify the Contractor to discontinue all work, or any part thereof; and thereupon the Contractor shall discontinue such work or such part thereof as the Owner may designate, and the owner may thereupon: by Contract or otherwise, as it may determine, complete the work, or such part thereof, and charge the entire expense of so completing the work or part thereof to the Contractor; and for such completion the Owner for itself or its Contractors may take possession of and use or cause to be used in the completion of the work or part thereof, any of such materials, equipment, machinery, implements, and tools of every description as may be found at the location of said work. The right is reserved to the Owner, at all times, to call upon Contractor's Surety to complete such work.

b. All expenses charged under this article shall be deducted and paid by the Owner out of any moneys then due or to become due the Contractor under this Contract, or any part thereof; and in such accounting the Owner shall not be held to obtain the lowest figures for the work completing the Contract or any part thereof or for insuring its proper completion but all sums actually paid therefore shall be charged to the Contractor. In the case such expenses shall exceed the contract balance maintained by the Owner, the Contractor shall pay the amount of the excess to the Owner.

**37. ACCEPTANCE OF FINAL PAYMENT CONSTITUTES RELEASE**

a. The acceptance by the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Contractor and others relating to or arising out of this work. No payment, however, final or otherwise, shall operate to release the Contractor or his Sureties from any obligations under this Contract or the Performance and Payment Bond.

**38. RETAIN FOR REPAIRS**

a. The Owner may, after the final completion of the work, retain out of the moneys due the Contractor under this Contract such sum of money as may, in the judgment of the Owner, be required to cover the cost of any repairs to the work, and may expend the same in the manner provided therefore in making such repairs.

b. It is agreed, however, that the Owner may also apply the sum so retained to payment of other claims of the Owner against the Contractor.

**39. CLAIMS FOR EXTRA COST**

a. No claim for extra work or cost shall be allowed unless the same was done in pursuance of a written change order signed by the Owner and Contractor. The Contractor shall furnish satisfactory bills, payrolls and vouchers covering all items of cost and when requested by the Owner, give the Owner access to amounts relating thereto.

**40. SEPARATE CONTRACT**

a. The Contractor shall coordinate his operations with those of other Contractors. Cooperation may be required in the arrangement for storage of materials and in the detailed execution of the work. The Contractor, including his subcontractors, shall keep informed of the progress and the detail work of other Contractors and shall notify the Engineer immediately of lack of progress or defective workmanship on the part of other Contractors.

**41. CONFLICTING CONDITIONS**

a. In the event any provisions in any of the Contract Documents conflict or are inconsistent with any other such provisions, such conflict or inconsistency shall be resolved by interpreting the provisions in a manner that is most favorable to the Owner, and provides the Owner with the greater quantity and better quality of goods and services.

**42. DISCREPANCIES, ERRORS AND OMISSIONS**

a. The plans and specifications are intended to be explanatory of the work to be done and of each other, but should any discrepancies or errors appear or any omissions be made, they shall immediately be called to the attention of the Engineer by the Contractor, subject to his corrections and interpretation, thereby defining and fulfilling the intent of this Contract. Contractor's failure to so notify the Engineer of errors or omissions of which the Contractor has knowledge shall cause the Contractor to be responsible for any damages arising therefrom.

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**BID FORM**  
**MERRILL STREET RECONSTRUCTION**  
**Project #: R13-1019**

The undersigned bidder proposes to furnish all labor and equipment to do all necessary work under this Contract for the City of Newburyport, Massachusetts acting through its Mayor and in accordance with the accompanying Specifications provided by the Authorized Representative, for the sum specified below in the Bid Price Form, which is a part of this Bid Form, subject to additions and deductions according to the Contract Document and in all respects according to the terms thereof. Bidder will within seven (7) days, (Sundays and holidays excluded) after presentation by the City of Newburyport's Authorized Representative, execute the Contract in triplicate, and furnish the required insurance certificates and 100% Performance Bond, plus a 100% Payment Bond (Labor and Materials), as required by the Contract Documents, the premiums for which are to be paid by the Contractor and are included in the Contract price.

The undersigned bidder hereby certifies under pain and penalties of perjury as follows:

1. Bidder has thoroughly examined the Contract Documents, and has visited, observed and thus is familiar with the site where the work will be performed, and has correlated his observations with the Contract Documents.
2. Bidder understands that, to the fullest extent permitted by law, the City reserves the rights to waive informalities in the bids and to reject any and all bids or any part thereof, and to accept a bid that is not the lowest bid if such lowest bid was submitted by a bidder that is not responsible or eligible.
3. Bidder has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.
4. 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.
5. Bidder is not presently debarred from doing public construction work in the commonwealth under the provisions of Chapter 29, Section 29F of the General Laws, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated hereunder.
6. Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; and 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 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 payroll report for each employee and 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 Occupational Safety and Health Administration that is at least 10 hours in duration.

7. To the best of Bidder's knowledge, no person in the employ of said City has any pecuniary interest in this Bid or in the Contract for the work he proposes to do and that he understands and agrees that the City, its agents and employees, are not in any manner to be held personally liable for any reason in connection with the Contract.

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Company Name Fed Id #

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Business Address

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Telephone Fax Email

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Contact Person Phone # Email

Submits the attached Bid Price Form for the following:

**MERRILL STREET RECONSTRUCTION**  
**Project #: R13-1019**

to the **City of Newburyport** on the authority of the undersigned and as dated below. The Bidder confirms and pledges to abide by and be held to the requirements of the Bid Documents and its resulting Contract(s), and further, to diligently and promptly perform any tasks and deliver any documents required, and to execute a Contract with the City.

**This Bid includes Addenda number(s)** \_\_\_\_\_  
(Bidder must acknowledge only Addenda that apply to the bid items bid upon.)

**BID PRICE FORM**

Item #	Item With Unit Price Written in Words	Est. Qty.	Unit Price (in Figures)	Subtotal Amount (in Figures)
1A	TREE & STUMP REMOVED (UNDER 24 INCH DIAM.) At _____ PER EACH	3		
1B	TREE & STUMP REMOVED (24 INCH DIAM. & OVER) At _____ PER EACH	1		
2A	UNCLASSIFIED EXCAVATION At _____ PER CUBIC YARD	2,100		
2B	ROCK EXCAVATION At _____ PER CUBIC YARD	50		
3A	UTILITY STRUCTURE ABANDONED At _____ PER EACH	4		
3B	UTILITY STRUCTURE REMOVED At _____ PER EACH	8		
4	GRAVEL BORROW At _____ PER CUBIC YARD	100		
5	CRUSHED STONE FOR DRIVEWAYS At _____ PER TON	15		
6	CATCH BASIN W/ FRAME & GRATE At _____ PER EACH	7		
7	DRAIN MANHOLE W/ FRAME & COVER At _____ PER EACH	7		
8	GUTTER INLET STRUCTURE W/ FRAME & GRATE At _____ PER EACH	1		

Item #	Item With Unit Price Written in Words	Est. Qty.	Unit Price (in Figures)	Subtotal Amount (in Figures)
9	SEWER MANHOLE W/ FRAME & COVER At _____ PER EACH	3		
10A	8" DICL DRAIN PIPE At _____ PER LINEAR FOOT	35		
10B	12" DICL DRAIN PIPE At _____ PER LINEAR FOOT	30		
11A	12" RCP At _____ PER LINEAR FOOT	40		
11B	15" RCP At _____ PER LINEAR FOOT	45		
11C	18" RCP At _____ PER LINEAR FOOT	30		
12A	6" PVC SEWER PIPE At _____ PER LINEAR FOOT	360		
12B	8" PVC SEWER PIPE At _____ PER LINEAR FOOT	820		
13A	12" HDPE DRAIN PIPE At _____ PER LINEAR FOOT	80		
13B	15" HDPE DRAIN PIPE At _____ PER LINEAR FOOT	760		
14	TEMPORARY WATER SERVICE At _____ PER LUMP SUM	1		
15A	6" DI WATER PIPE AND FITTINGS At _____ PER LINEAR FOOT	30		



Item #	Item With Unit Price Written in Words	Est. Qty.	Unit Price (in Figures)	Subtotal Amount (in Figures)
15B	8" DI WATER PIPE AND FITTINGS At _____ PER LINEAR FOOT	800		
16	WATER SERVICE CONNECTIONS At _____ PER EACH	27		
17A	6" GATE VALVE AND BOX At _____ PER EACH	2		
17B	8" GATE VALVE AND BOX At _____ PER EACH	4		
18	GATE BOX At _____ PER EACH	4		
19	GATE BOX ADJUSTED At _____ PER EACH	2		
20	SERVICE BOX ADJUSTED At _____ PER EACH	19		
21	HYDRANT At _____ PER EACH	2		
22A	HOT MIX ASPHALT BASE COURSE At _____ PER TON	22		
22B	HOT MIX ASPHALT At _____ PER TON	450		
22C	HOT MIX ASPHALT MISC. WORK At _____ PER TON	220		
22D	HOT MIX ASPHALT DRIVEWAY At _____ PER TON	13		

<b>Item #</b>	<b>Item With Unit Price Written in Words</b>	<b>Est. Qty.</b>	<b>Unit Price (in Figures)</b>	<b>Subtotal Amount (in Figures)</b>
23	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL At _____ PER POUND	15,000		
24	WATER FOR ROADWAY DUST CONTROL At _____ PER GALLON	20,000		
25	BITUMEN FOR TACK COAT At _____ PER EACH	400		
26	HOT POURED RUBBERIZED ASPHALT SEALER At _____ PER FOOT	1,600		
27	SAWING ASPHALT PAVEMENT At _____ PER FOOT	650		
28A	GRANITE CURB TYPE VB - STRAIGHT At _____ PER LINEAR FOOT	900		
28B	GRANITE CURB TYPE VB - CURVED At _____ PER LINEAR FOOT	100		
28C	GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - STRAIGHT At _____ PER LINEAR FOOT	320		
28D	GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - CURVED At _____ PER LINEAR FOOT	45		
29A	GRANITE CURB INLET - STRAIGHT At _____ PER EACH	7		
29B	GRANITE CURB CORNER - TYPE A At _____ PER EACH	28		

Item #	Item With Unit Price Written in Words	Est. Qty.	Unit Price (in Figures)	Subtotal Amount (in Figures)
29C	GRANITE BULLNOSE CORNERS At _____ PER EACH	3		
30	CURB REMOVED AND STACKED At _____ PER LINEAR FOOT	250		
31	48 INCH WOOD STOCKADE FENCE At _____ PER FOOT	25		
32	STONE MASONRY WALL REMOVED AND REBUILT IN CEMENT MORTAR At _____ PER CUBIC YARD	8		
33	BLOCK WALL REMOVED & REBUILT At _____ PER LINEAR FOOT	50		
34A	CEMENT CONCRETE SIDEWALK At _____ PER SQUARE YARD	700		
34B	CEMENT CONCRETE SIDEWALK AT DRIVEWAYS At _____ PER SQUARE YARD	180		
34C	CONCRETE WHEELCHAIR RAMP At _____ PER SQUARE YARD	140		
35	BRICK & UNIT PAVER SIDEWALK & DRIVEWAY REMOVE AND RESET At _____ PER SQUARE YARD	220		
36	LOAM AND SEED At _____ PER SQUARE YARD	180		
37	NPDES STORMWATER POLLUTION PREVENTION At _____ PER LUMP SUM	1		

Item #	Item With Unit Price Written in Words	Est. Qty.	Unit Price (in Figures)	Subtotal Amount (in Figures)
38	MAPLE - RED 60-80mm CALIPER  At _____ PER EACH	8		
39	ALUMINUM SIGN PANEL  At _____ PER SQUARE FOOT	95		
40	STEEL SIGN POST  At _____ PER EACH	19		
41	SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS  At _____ PER LUMP SUM	1		
42	CROSS WALKS AND STOP LINES REFLECTORIZED WHITE (THERMOPLASTIC)  At _____ PER SQUARE FOOT	310		
43	STREET NAME SIGN  At _____ PER EACH	3		
44	SIGN REMOVED AND STACKED  At _____ PER EACH	6		
45	POLICE DETAILS  At _____ PER HOUR	200		
46	TEST PIT FOR EXPLORATION  At _____ PER CUBIC YARD	50		
47	MISCELLANEOUS SITE WORK  At _____ PER LUMP SUM	1		
<b>TOTAL (sum of all subtotal figures)</b>				

The Bidder agrees to perform the Bid Work described in these Contract Documents for the following total contract price:

**In Words:** \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
**Authorized Individual (Printed)**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Company Name**

\_\_\_\_\_  
**Tax ID #**

\_\_\_\_\_  
**Phone**

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## **RECORD OF CONTRACTOR'S PERFORMANCE**

1. Have been in business under present business name and organization structure for \_\_\_\_year(s).
2. Ever been terminated or otherwise failed to complete any work awarded? \_\_\_\_\_ If yes, Describe circumstances on Separate sheet. Include names of customer and dates.
3. List below the required information from the last (3) three years of contracts on which you served as General Contractor.
4. Bidder shall identify at least (3) similar contract for similar work for a municipality that is required by this Contract and completed within the last (5) three years
5. Attach reference list to this form; ensure the following information is included for each reference:
  - a. Job Name
  - b. Job Description
  - c. Project Manager
  - d. Contract Amount
  - e. Date Completed
  - f. Municipality/Owner/Business
  - g. Municipality/Owner/Business Address
  - h. Current Contact Name
  - i. Contact Number

## **RECORD OF CONTRACTOR EQUIPMENT**

1. List below the equipment and equipment operators sufficient to accomplish the proposed work.
2. List below the experienced employees on staff to properly and efficiently accomplish the proposed work.



**PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS that \_\_\_\_\_

\_\_\_\_\_

as Principal, and \_\_\_\_\_

\_\_\_\_\_

as Surety, are held and firmly bound unto the Awarding Authority, in the sum of \_\_\_\_\_

\_\_\_\_\_

lawful money of the United States of America to be paid to the Awarding Authority 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 Awarding Authority bearing date of \_\_\_\_\_ 20 \_\_\_\_, for the construction of

\_\_\_\_\_

(Project)

Now the condition of this obligation is such that if the Principal shall well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of said contract and any extensions thereof that may be granted by the Awarding Authority, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of any and all duly authorized modifications, alterations, changes or additions to said contract that may hereafter be made, notice to the surety of such modifications, alterations, changes or additions being hereby waived, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

In the event that the contract is abandoned by the Contractor, or is terminated by the Awarding Authority, said surety hereby further agrees that said surety shall, if required in writing by the Awarding Authority, take such action as is necessary to complete said contract.

In witness whereof we hereunto set our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, A.D., 20 \_\_\_\_\_

By \_\_\_\_\_

\_\_\_\_\_  
(Seal) Principle

By \_\_\_\_\_

\_\_\_\_\_  
(Seal) Surety

Surety Agent: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone No.: \_\_\_\_\_

APPROVED: \_\_\_\_\_

City of Newburyport

**CERTIFICATE AS TO CORPORATE PRINCIPAL (PERFORMANCE BOND)**

I, \_\_\_\_\_ certify that I am the \_\_\_\_\_

\_\_\_\_\_  
(of the corporation named as principal in the within bond); that who signed said Bond on behalf of the Principal was then \_\_\_\_\_ of said corporation and I know his signature, and his signature thereon is genuine; and that said Bond was duly signed, sealed and attested for and on behalf of said corporation by authority of its governing body.

\_\_\_\_\_  
(Corporate Seal)

\_\_\_\_\_, 20\_\_

Rate of Premium on this Bond is \$ \_\_\_\_\_ per thousand.

Total Amount of Premium Charge is \$ \_\_\_\_\_

\_\_\_\_\_  
Signature

**PAYMENT BOND (LABOR AND MATERIAL)**

KNOW ALL MEN BY THESE PRESENTS that \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

as Principal, and \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

as Surety, are held and firmly bound unto the Awarding Authority, in the sum of \_\_\_\_\_  
\_\_\_\_\_ lawful money of the United States of America to be paid to the Awarding Authority  
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 Awarding Authority bearing date of  
\_\_\_\_\_, 20\_\_\_\_\_ for the construction of \_\_\_\_\_  
(Project)

Now the condition of this obligation is such that if the Principal shall promptly 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 of items set out in, and to be subject to, the  
provisions of Massachusetts General Laws (Ter. Ed.), Chapter 30, Section 39A, and Chapter 149, Section 29  
as amended, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

In witness whereof we hereunto set our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, A.D., 20\_\_\_\_\_

By \_\_\_\_\_  
(Seal) Principal

By \_\_\_\_\_  
(Seal) Surety

\_\_\_\_\_  
(Address)

Surety Agent: \_\_\_\_\_

Address : \_\_\_\_\_

Phone No.: \_\_\_\_\_ APPROVED: \_\_\_\_\_

City of Newburyport

**VOTE REQUIRED IF CONTRACTOR IS A CORPORATION**

At a meeting of the Board of Directors of

\_\_\_\_\_duly called and held

on \_\_\_\_\_at which a quorum was present and acting throughout the following

Vote was duly adopted:

VOTED; That the action of \_\_\_\_\_

the \_\_\_\_\_of the Corporation, in affixing the Corporate Seal,

signing and delivering in the name and behalf of the Corporation a Contract with the City of Newburyport for

\_\_\_\_\_and also in sealing and executing

as above surety company bonds to secure the performance of said Contract be and hereby are ratified, confirmed and adopted.

A true copy:

Attest:

(Corporate Seal)

\_\_\_\_\_  
Clerk of the Corporation

## **WAGE RATES**





DEVAL L. PATRICK  
Governor  
TIMOTHY P. MURRAY  
Lt. Governor

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

**Prevailing Wage Rates**

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

JOANNE F. GOLDSTEIN  
Secretary  
HEATHER E. ROWE  
Director

**Awarding Authority:** Newburyport Dept of Public Services  
**Contract Number:** R13-1019 **City/Town:** NEWBURYPORT  
**Description of Work:** Full reconstruction of Merrill Street, approx 800 feet, incl but not limited to, roadway, sidewalks, curbing, water & sewer main w/services, drain, landscape, tree removal & replacement  
**Job Location:** Merrill St, Newburyport

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**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.
- Awarding authorities 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.
- 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. Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project. The wage schedule must be posted in a conspicuous place at the work site during 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 regardless of 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 Division of Apprentice Training (DAT). Apprentices must keep his/her apprentice identification card on his/her person during all work hours on the project. If an apprentice rate is listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **If an apprentice rate is not listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice 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. 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 directly to the awarding authority 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.

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$30.45	\$8.91	\$8.00	\$0.00	\$47.36
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$30.52	\$8.91	\$8.00	\$0.00	\$47.43
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$30.64	\$9.07	\$8.00	\$0.00	\$47.71
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$82.32	\$9.80	\$17.67	\$0.00	\$109.79
	08/01/2013	\$85.47	\$9.80	\$17.67	\$0.00	\$112.94
	08/01/2014	\$88.62	\$9.80	\$17.67	\$0.00	\$116.09
	08/01/2015	\$91.77	\$9.80	\$17.67	\$0.00	\$119.24
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	12/01/2013	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	06/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	12/01/2014	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	06/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	12/01/2015	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	06/01/2016	\$33.60	\$7.10	\$11.80	\$0.00	\$52.50
	12/01/2016	\$34.35	\$7.10	\$11.80	\$0.00	\$53.25
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	06/01/2013	\$29.88	\$10.40	\$5.95	\$0.00	\$46.23
	12/01/2013	\$30.68	\$10.40	\$5.95	\$0.00	\$47.03
	06/01/2014	\$31.58	\$10.40	\$5.95	\$0.00	\$47.93
	12/01/2014	\$32.48	\$10.40	\$5.95	\$0.00	\$48.83
	06/01/2015	\$33.43	\$10.40	\$5.95	\$0.00	\$49.78
	12/01/2015	\$34.38	\$10.40	\$5.95	\$0.00	\$50.73
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	12/01/2013	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	06/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	12/01/2014	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	06/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	12/01/2015	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	06/01/2016	\$33.60	\$7.10	\$11.80	\$0.00	\$52.50
	12/01/2016	\$34.35	\$7.10	\$11.80	\$0.00	\$53.25
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2010	\$37.70	\$6.97	\$11.18	\$0.00	\$55.85

**Apprentice - BOILERMAKER - Local 29**

**Effective Date - 01/01/2010**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$24.51	\$6.97	\$11.18	\$0.00	\$42.66
2	65	\$24.51	\$6.97	\$11.18	\$0.00	\$42.66
3	70	\$26.39	\$6.97	\$11.18	\$0.00	\$44.54
4	75	\$28.28	\$6.97	\$11.18	\$0.00	\$46.43
5	80	\$30.16	\$6.97	\$11.18	\$0.00	\$48.31
6	85	\$32.05	\$6.97	\$11.18	\$0.00	\$50.20
7	90	\$33.93	\$6.97	\$11.18	\$0.00	\$52.08
8	95	\$35.82	\$6.97	\$11.18	\$0.00	\$53.97

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (LYNN)</i>	02/01/2013	\$47.41	\$10.18	\$17.83	\$0.00	\$75.42
	08/01/2013	\$48.06	\$10.18	\$18.15	\$0.00	\$76.39
	02/01/2014	\$48.62	\$10.18	\$18.15	\$0.00	\$76.95
	08/01/2014	\$49.52	\$10.18	\$18.22	\$0.00	\$77.92
	02/01/2015	\$50.08	\$10.18	\$18.22	\$0.00	\$78.48
	08/01/2015	\$50.98	\$10.18	\$18.29	\$0.00	\$79.45
	02/01/2016	\$51.55	\$10.18	\$18.29	\$0.00	\$80.02
	08/01/2016	\$52.45	\$10.18	\$18.37	\$0.00	\$81.00
	02/01/2017	\$53.02	\$10.18	\$18.37	\$0.00	\$81.57

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Lynn**

**Effective Date - 02/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.71	\$10.18	\$17.83	\$0.00	\$51.72
2	60	\$28.45	\$10.18	\$17.83	\$0.00	\$56.46
3	70	\$33.19	\$10.18	\$17.83	\$0.00	\$61.20
4	80	\$37.93	\$10.18	\$17.83	\$0.00	\$65.94
5	90	\$42.67	\$10.18	\$17.83	\$0.00	\$70.68

**Effective Date - 08/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.03	\$10.18	\$18.15	\$0.00	\$52.36
2	60	\$28.84	\$10.18	\$18.15	\$0.00	\$57.17
3	70	\$33.64	\$10.18	\$18.15	\$0.00	\$61.97
4	80	\$38.45	\$10.18	\$18.15	\$0.00	\$66.78
5	90	\$43.25	\$10.18	\$18.15	\$0.00	\$71.58

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$34.20	\$7.10	\$12.60	\$0.00	\$53.90
	12/01/2013	\$34.95	\$7.10	\$12.60	\$0.00	\$54.65
	06/01/2014	\$35.70	\$7.10	\$12.60	\$0.00	\$55.40
	12/01/2014	\$36.45	\$7.10	\$12.60	\$0.00	\$56.15
	06/01/2015	\$37.20	\$7.10	\$12.60	\$0.00	\$56.90
	12/01/2015	\$37.95	\$7.10	\$12.60	\$0.00	\$57.65
	06/01/2016	\$38.70	\$7.10	\$12.60	\$0.00	\$58.40
	12/01/2016	\$39.70	\$7.10	\$12.60	\$0.00	\$59.40

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$33.05	\$7.10	\$12.60	\$0.00	\$52.75
	12/01/2013	\$33.80	\$7.10	\$12.60	\$0.00	\$53.50
	06/01/2014	\$34.55	\$7.10	\$12.60	\$0.00	\$54.25
	12/01/2014	\$35.30	\$7.10	\$12.60	\$0.00	\$55.00
	06/01/2015	\$36.05	\$7.10	\$12.60	\$0.00	\$55.75
	12/01/2015	\$36.80	\$7.10	\$12.60	\$0.00	\$56.50
	06/01/2016	\$37.55	\$7.10	\$12.60	\$0.00	\$57.25
	12/01/2016	\$38.55	\$7.10	\$12.60	\$0.00	\$58.25

For apprentice rates see "Apprentice- LABORER"

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$33.05	\$7.10	\$12.60	\$0.00	\$52.75
	12/01/2013	\$33.80	\$7.10	\$12.60	\$0.00	\$53.50
	06/01/2014	\$34.55	\$7.10	\$12.60	\$0.00	\$54.25
	12/01/2014	\$35.30	\$7.10	\$12.60	\$0.00	\$55.00
	06/01/2015	\$36.05	\$7.10	\$12.60	\$0.00	\$55.75
	12/01/2015	\$36.80	\$7.10	\$12.60	\$0.00	\$56.50
	06/01/2016	\$37.55	\$7.10	\$12.60	\$0.00	\$57.25
	12/01/2016	\$38.55	\$7.10	\$12.60	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2013	\$33.92	\$9.80	\$15.61	\$0.00	\$59.33
	09/01/2013	\$34.53	\$9.80	\$15.61	\$0.00	\$59.94
	03/01/2014	\$35.13	\$9.80	\$15.61	\$0.00	\$60.54
	09/01/2014	\$35.90	\$9.80	\$15.61	\$0.00	\$61.31
	03/01/2015	\$36.67	\$9.80	\$15.61	\$0.00	\$62.08

**Apprentice - CARPENTER - Zone 2 Eastern MA**

**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.96	\$9.80	\$1.57	\$0.00	\$28.33
2	60	\$20.35	\$9.80	\$1.57	\$0.00	\$31.72
3	70	\$23.74	\$9.80	\$10.90	\$0.00	\$44.44
4	75	\$25.44	\$9.80	\$10.90	\$0.00	\$46.14
5	80	\$27.14	\$9.80	\$12.47	\$0.00	\$49.41
6	80	\$27.14	\$9.80	\$12.47	\$0.00	\$49.41
7	90	\$30.53	\$9.80	\$14.04	\$0.00	\$54.37
8	90	\$30.53	\$9.80	\$14.04	\$0.00	\$54.37

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.27	\$9.80	\$1.57	\$0.00	\$28.64
2	60	\$20.72	\$9.80	\$1.57	\$0.00	\$32.09
3	70	\$24.17	\$9.80	\$10.90	\$0.00	\$44.87
4	75	\$25.90	\$9.80	\$10.90	\$0.00	\$46.60
5	80	\$27.62	\$9.80	\$12.47	\$0.00	\$49.89
6	80	\$27.62	\$9.80	\$12.47	\$0.00	\$49.89
7	90	\$31.08	\$9.80	\$14.04	\$0.00	\$54.92
8	90	\$31.08	\$9.80	\$14.04	\$0.00	\$54.92

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

CEMENT MASONRY/PLASTERING	07/01/2013	\$42.68	\$10.90	\$18.71	\$1.30	\$73.59
BRICKLAYERS LOCAL 3 (LYNN)	01/01/2014	\$43.60	\$10.90	\$18.71	\$1.30	\$74.51
	07/01/2014	\$44.20	\$10.90	\$18.71	\$1.30	\$75.11
	01/01/2015	\$45.14	\$10.90	\$18.71	\$1.30	\$76.05
	07/01/2015	\$45.72	\$10.90	\$18.71	\$1.30	\$76.63
	01/01/2016	\$46.64	\$10.90	\$18.71	\$1.30	\$77.55

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Lynn)**

**Effective Date - 07/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.34	\$10.90	\$12.21	\$1.30	\$45.75
2	60	\$25.61	\$10.90	\$13.71	\$1.30	\$51.52
3	65	\$27.74	\$10.90	\$14.71	\$1.30	\$54.65
4	70	\$29.88	\$10.90	\$15.71	\$1.30	\$57.79
5	75	\$32.01	\$10.90	\$16.71	\$1.30	\$60.92
6	80	\$34.14	\$10.90	\$17.71	\$1.30	\$64.05
7	90	\$38.41	\$10.90	\$18.71	\$1.30	\$69.32

**Effective Date - 01/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.80	\$10.90	\$12.21	\$1.30	\$46.21
2	60	\$26.16	\$10.90	\$13.71	\$1.30	\$52.07
3	65	\$28.34	\$10.90	\$14.71	\$1.30	\$55.25
4	70	\$30.52	\$10.90	\$15.71	\$1.30	\$58.43
5	75	\$32.70	\$10.90	\$16.71	\$1.30	\$61.61
6	80	\$34.88	\$10.90	\$17.71	\$1.30	\$64.79
7	90	\$39.24	\$10.90	\$18.71	\$1.30	\$70.15

**Notes:**

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

**Apprentice to Journeyworker Ratio:1:3**

CHAIN SAW OPERATOR LABORERS - ZONE 2	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4	06/01/2013	\$41.34	\$10.00	\$13.55	\$0.00	\$64.89
	12/01/2013	\$42.12	\$10.00	\$13.55	\$0.00	\$65.67

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 4	06/01/2013	\$28.19	\$10.00	\$13.55	\$0.00	\$51.74
	12/01/2013	\$28.74	\$10.00	\$13.55	\$0.00	\$52.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 2	01/01/2013	\$45.01	\$7.80	\$15.60	\$0.00	\$68.41
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**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.51	\$7.80	\$0.00	\$0.00	\$30.31
2	55	\$24.76	\$7.80	\$3.52	\$0.00	\$36.08
3	60	\$27.01	\$7.80	\$3.84	\$0.00	\$38.65
4	65	\$29.26	\$7.80	\$4.16	\$0.00	\$41.22
5	70	\$31.51	\$7.80	\$13.68	\$0.00	\$52.99
6	75	\$33.76	\$7.80	\$14.00	\$0.00	\$55.56
7	80	\$36.01	\$7.80	\$14.32	\$0.00	\$58.13
8	90	\$40.51	\$7.80	\$14.96	\$0.00	\$63.27

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

DEMO: ADZEMAN LABORERS - ZONE 2	12/01/2011	\$31.80	\$7.10	\$12.45	\$0.00	\$51.35
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 2	12/01/2011	\$32.80	\$7.10	\$12.45	\$0.00	\$52.35
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS LABORERS - ZONE 2	12/01/2011	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 2	12/01/2011	\$32.80	\$7.10	\$12.45	\$0.00	\$52.35
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 2	12/01/2011	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER LABORERS - ZONE 2	12/01/2011	\$31.80	\$7.10	\$12.45	\$0.00	\$51.35
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR OPERATING ENGINEERS LOCAL 4	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2012	\$54.88	\$9.80	\$17.67	\$0.00	\$82.35
	08/01/2013	\$56.98	\$9.80	\$17.67	\$0.00	\$84.45
	08/01/2014	\$59.08	\$9.80	\$17.67	\$0.00	\$86.55
	08/01/2015	\$61.18	\$9.80	\$17.67	\$0.00	\$88.65
DIVER TENDER PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2012	\$54.88	\$9.80	\$17.67	\$0.00	\$82.35
	08/01/2013	\$56.98	\$9.80	\$17.67	\$0.00	\$84.45
	08/01/2014	\$59.08	\$9.80	\$17.67	\$0.00	\$86.55
	08/01/2015	\$61.18	\$9.80	\$17.67	\$0.00	\$88.65

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$58.80	\$9.80	\$17.67	\$0.00	\$86.27
	08/01/2013	\$61.05	\$9.80	\$17.67	\$0.00	\$88.52
	08/01/2014	\$63.30	\$9.80	\$17.67	\$0.00	\$90.77
	08/01/2015	\$65.55	\$9.80	\$17.67	\$0.00	\$93.02
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$82.32	\$9.80	\$17.67	\$0.00	\$109.79
	08/01/2013	\$85.47	\$9.80	\$17.67	\$0.00	\$112.94
	08/01/2014	\$88.62	\$9.80	\$17.67	\$0.00	\$116.09
	08/01/2015	\$91.77	\$9.80	\$17.67	\$0.00	\$119.24
DRAWBRIDGE OPERATOR (Construction) <i>ELECTRICIANS LOCAL 103</i>	03/01/2013	\$43.52	\$13.00	\$14.16	\$0.00	\$70.68
	09/01/2013	\$44.20	\$13.00	\$14.18	\$0.00	\$71.38
	03/01/2014	\$44.92	\$13.00	\$14.20	\$0.00	\$72.12
	09/01/2014	\$45.60	\$13.00	\$14.22	\$0.00	\$72.82
	03/01/2015	\$46.32	\$13.00	\$14.24	\$0.00	\$73.56
	09/01/2015	\$47.27	\$13.00	\$14.27	\$0.00	\$74.54
	03/01/2016	\$48.23	\$13.00	\$14.30	\$0.00	\$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2013	\$43.52	\$13.00	\$14.16	\$0.00	\$70.68
	09/01/2013	\$44.20	\$13.00	\$14.18	\$0.00	\$71.38
	03/01/2014	\$44.92	\$13.00	\$14.20	\$0.00	\$72.12
	09/01/2014	\$45.60	\$13.00	\$14.22	\$0.00	\$72.82
	03/01/2015	\$46.32	\$13.00	\$14.24	\$0.00	\$73.56
	09/01/2015	\$47.27	\$13.00	\$14.27	\$0.00	\$74.54
	03/01/2016	\$48.23	\$13.00	\$14.30	\$0.00	\$75.53

**Apprentice - ELECTRICIAN - Local 103**

**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.41	\$13.00	\$0.52	\$0.00	\$30.93
2	40	\$17.41	\$13.00	\$0.52	\$0.00	\$30.93
3	45	\$19.58	\$13.00	\$10.53	\$0.00	\$43.11
4	45	\$19.58	\$13.00	\$10.53	\$0.00	\$43.11
5	50	\$21.76	\$13.00	\$10.85	\$0.00	\$45.61
6	55	\$23.94	\$13.00	\$11.19	\$0.00	\$48.13
7	60	\$26.11	\$13.00	\$11.51	\$0.00	\$50.62
8	65	\$28.29	\$13.00	\$11.85	\$0.00	\$53.14
9	70	\$30.46	\$13.00	\$12.17	\$0.00	\$55.63
10	75	\$32.64	\$13.00	\$12.51	\$0.00	\$58.15

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.68	\$13.00	\$0.53	\$0.00	\$31.21
2	40	\$17.68	\$13.00	\$0.53	\$0.00	\$31.21
3	45	\$19.89	\$13.00	\$10.54	\$0.00	\$43.43
4	45	\$19.89	\$13.00	\$10.54	\$0.00	\$43.43
5	50	\$22.10	\$13.00	\$10.86	\$0.00	\$45.96
6	55	\$24.31	\$13.00	\$11.20	\$0.00	\$48.51
7	60	\$26.52	\$13.00	\$11.53	\$0.00	\$51.05
8	65	\$28.73	\$13.00	\$11.86	\$0.00	\$53.59
9	70	\$30.94	\$13.00	\$12.19	\$0.00	\$56.13
10	75	\$33.15	\$13.00	\$12.53	\$0.00	\$58.68

**Notes :**  
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

**Apprentice to Journeyworker Ratio:2:3\*\*\***

ELEVATOR CONSTRUCTOR	01/01/2012	\$52.45	\$8.78	\$6.96	\$0.00	\$68.19
ELEVATOR CONSTRUCTORS LOCAL 4						



**Apprentice - ELEVATOR CONSTRUCTOR - Local 4**

**Effective Date - 01/01/2012**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.23	\$8.78	\$0.00	\$0.00	\$35.01
2	55	\$28.85	\$8.78	\$6.96	\$0.00	\$44.59
3	65	\$34.09	\$8.78	\$6.96	\$0.00	\$49.83
4	70	\$36.72	\$8.78	\$6.96	\$0.00	\$52.46
5	80	\$41.96	\$8.78	\$6.96	\$0.00	\$57.70

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

**Apprentice to Journeyworker Ratio:1:1**

ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2012	\$38.59	\$8.78	\$6.96	\$0.00	\$54.33
FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2013	\$38.50	\$10.00	\$13.02	\$0.00	\$61.52
	11/01/2013	\$39.26	\$10.00	\$13.02	\$0.00	\$62.28
	05/01/2014	\$40.03	\$10.00	\$13.02	\$0.00	\$63.05
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2013	\$39.91	\$10.00	\$13.02	\$0.00	\$62.93
	11/01/2013	\$40.68	\$10.00	\$13.02	\$0.00	\$63.70
	05/01/2014	\$41.45	\$10.00	\$13.02	\$0.00	\$64.47
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2013	\$21.17	\$10.00	\$13.02	\$0.00	\$44.19
	11/01/2013	\$21.63	\$10.00	\$13.02	\$0.00	\$44.65
	05/01/2014	\$22.08	\$10.00	\$13.02	\$0.00	\$45.10
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2013	\$43.52	\$13.00	\$14.16	\$0.00	\$70.68
	09/01/2013	\$44.20	\$13.00	\$14.18	\$0.00	\$71.38
	03/01/2014	\$44.92	\$13.00	\$14.20	\$0.00	\$72.12
	09/01/2014	\$45.60	\$13.00	\$14.22	\$0.00	\$72.82
	03/01/2015	\$46.32	\$13.00	\$14.24	\$0.00	\$73.56
	09/01/2015	\$47.27	\$13.00	\$14.27	\$0.00	\$74.54
	03/01/2016	\$48.23	\$13.00	\$14.30	\$0.00	\$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
FIRE ALARM REPAIR / MAINTENANCE	03/01/2013	\$32.64	\$13.00	\$12.51	\$0.00	\$58.15
LOCAL 103 / COMMISSIONING <i>ELECTRICIANS</i>	09/01/2013	\$33.15	\$13.00	\$12.52	\$0.00	\$58.67
	03/01/2014	\$33.69	\$13.00	\$12.54	\$0.00	\$59.23
	09/01/2014	\$34.20	\$13.00	\$12.56	\$0.00	\$59.76
	03/01/2015	\$34.74	\$13.00	\$12.57	\$0.00	\$60.31
	09/01/2015	\$35.45	\$13.00	\$12.59	\$0.00	\$61.04
	03/01/2016	\$36.17	\$13.00	\$12.62	\$0.00	\$61.79
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER)	06/01/2013	\$33.73	\$10.00	\$13.55	\$0.00	\$57.28
OPERATING ENGINEERS LOCAL 4	12/01/2013	\$34.39	\$10.00	\$13.55	\$0.00	\$57.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER	06/01/2013	\$20.50	\$7.10	\$11.80	\$0.00	\$39.40
LABORERS - ZONE 2	12/01/2013	\$20.50	\$7.10	\$11.80	\$0.00	\$39.40
	06/01/2014	\$20.50	\$7.10	\$11.80	\$0.00	\$39.40
	12/01/2014	\$20.50	\$7.10	\$11.80	\$0.00	\$39.40
	06/01/2015	\$20.50	\$7.10	\$11.80	\$0.00	\$39.40
	12/01/2015	\$20.50	\$7.10	\$11.80	\$0.00	\$39.40
	06/01/2016	\$20.50	\$7.10	\$11.80	\$0.00	\$39.40
	12/01/2016	\$20.50	\$7.10	\$11.80	\$0.00	\$39.40
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER	03/01/2013	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12
FLOORCOVERERS LOCAL 2168 ZONE 1	09/01/2013	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12
	03/01/2014	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - FLOORCOVERER - Local 2168 Zone I**

**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

**Notes:**  
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$28.19	\$10.00	\$13.55	\$0.00	\$51.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2013	\$28.74	\$10.00	\$13.55	\$0.00	\$52.29
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2013	\$35.51	\$7.80	\$14.60	\$0.00	\$57.91

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - GLAZIER - Local 35 Zone 2**

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.76	\$7.80	\$0.00	\$0.00	\$25.56
2	55	\$19.53	\$7.80	\$3.25	\$0.00	\$30.58
3	60	\$21.31	\$7.80	\$3.54	\$0.00	\$32.65
4	65	\$23.08	\$7.80	\$3.84	\$0.00	\$34.72
5	70	\$24.86	\$7.80	\$12.83	\$0.00	\$45.49
6	75	\$26.63	\$7.80	\$13.13	\$0.00	\$47.56
7	80	\$28.41	\$7.80	\$13.42	\$0.00	\$49.63
8	90	\$31.96	\$7.80	\$14.01	\$0.00	\$53.77

**Notes:**  
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
OPERATING ENGINEERS LOCAL 4	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date - 06/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.19	\$10.00	\$0.00	\$0.00	\$32.19
2	60	\$24.20	\$10.00	\$13.55	\$0.00	\$47.75
3	65	\$26.22	\$10.00	\$13.55	\$0.00	\$49.77
4	70	\$28.24	\$10.00	\$13.55	\$0.00	\$51.79
5	75	\$30.26	\$10.00	\$13.55	\$0.00	\$53.81
6	80	\$32.27	\$10.00	\$13.55	\$0.00	\$55.82
7	85	\$34.29	\$10.00	\$13.55	\$0.00	\$57.84
8	90	\$36.31	\$10.00	\$13.55	\$0.00	\$59.86

**Effective Date - 12/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.62	\$10.00	\$0.00	\$0.00	\$32.62
2	60	\$24.67	\$10.00	\$13.55	\$0.00	\$48.22
3	65	\$26.73	\$10.00	\$13.55	\$0.00	\$50.28
4	70	\$28.78	\$10.00	\$13.55	\$0.00	\$52.33
5	75	\$30.84	\$10.00	\$13.55	\$0.00	\$54.39
6	80	\$32.90	\$10.00	\$13.55	\$0.00	\$56.45
7	85	\$34.95	\$10.00	\$13.55	\$0.00	\$58.50
8	90	\$37.01	\$10.00	\$13.55	\$0.00	\$60.56

**Notes:**

**Apprentice to Journeyworker Ratio:1:6**

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2013	\$42.32	\$9.82	\$18.24	\$2.11	\$72.49
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For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2013	\$43.52	\$13.00	\$14.16	\$0.00	\$70.68
	09/01/2013	\$44.20	\$13.00	\$14.18	\$0.00	\$71.38
	03/01/2014	\$44.92	\$13.00	\$14.20	\$0.00	\$72.12
	09/01/2014	\$45.60	\$13.00	\$14.22	\$0.00	\$72.82
	03/01/2015	\$46.32	\$13.00	\$14.24	\$0.00	\$73.56
	09/01/2015	\$47.27	\$13.00	\$14.27	\$0.00	\$74.54
	03/01/2016	\$48.23	\$13.00	\$14.30	\$0.00	\$75.53

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2013	\$42.32	\$9.82	\$18.24	\$2.11	\$72.49
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For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING -WATER) PIPEFITTERS LOCAL 537 (Local 138)	03/01/2013	\$47.01	\$8.75	\$12.39	\$0.00	\$68.15
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For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

HVAC MECHANIC PIPEFITTERS LOCAL 537 (Local 138)	03/01/2013	\$47.01	\$8.75	\$12.39	\$0.00	\$68.15
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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 2	06/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	12/01/2013	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	06/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	12/01/2014	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	06/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	12/01/2015	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	06/01/2016	\$33.60	\$7.10	\$11.80	\$0.00	\$52.50
	12/01/2016	\$34.35	\$7.10	\$11.80	\$0.00	\$53.25

For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	09/01/2012	\$41.46	\$10.65	\$11.50	\$0.00	\$63.61
	09/01/2013	\$43.06	\$10.65	\$11.50	\$0.00	\$65.21
	09/01/2014	\$45.06	\$10.65	\$11.50	\$0.00	\$67.21

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

**Effective Date - 09/01/2012**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.73	\$10.65	\$8.60	\$0.00	\$39.98
2	60	\$24.88	\$10.65	\$9.18	\$0.00	\$44.71
3	70	\$29.02	\$10.65	\$9.76	\$0.00	\$49.43
4	80	\$33.17	\$10.65	\$10.34	\$0.00	\$54.16

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.53	\$10.65	\$8.60	\$0.00	\$40.78
2	60	\$25.84	\$10.65	\$9.18	\$0.00	\$45.67
3	70	\$30.14	\$10.65	\$9.76	\$0.00	\$50.55
4	80	\$34.45	\$10.65	\$10.34	\$0.00	\$55.44

**Notes:**  
Steps are 1 year

**Apprentice to Journeyworker Ratio:1:4**

IRONWORKER/WELDER IRONWORKERS LOCAL 7 (LAWRENCE AREA)	03/16/2013	\$35.82	\$7.70	\$18.35	\$0.00	\$61.87
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**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - IRONWORKER - Local 7 Lawrence**

**Effective Date - 03/16/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.49	\$7.70	\$18.35	\$0.00	\$47.54
2	70	\$25.07	\$7.70	\$18.35	\$0.00	\$51.12
3	75	\$26.87	\$7.70	\$18.35	\$0.00	\$52.92
4	80	\$28.66	\$7.70	\$18.35	\$0.00	\$54.71
5	85	\$30.45	\$7.70	\$18.35	\$0.00	\$56.50
6	90	\$32.24	\$7.70	\$18.35	\$0.00	\$58.29

**Notes:**

Structural 1:6; Ornamental 1:4

**Apprentice to Journeyworker Ratio:**

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS - ZONE 2	06/01/2013	\$29.85	\$7.10	\$11.80	\$0.00	\$48.75
	12/01/2013	\$30.35	\$7.10	\$11.80	\$0.00	\$49.25
	06/01/2014	\$30.85	\$7.10	\$11.80	\$0.00	\$49.75
	12/01/2014	\$31.35	\$7.10	\$11.80	\$0.00	\$50.25
	06/01/2015	\$31.85	\$7.10	\$11.80	\$0.00	\$50.75
	12/01/2015	\$32.35	\$7.10	\$11.80	\$0.00	\$51.25
	06/01/2016	\$32.85	\$7.10	\$11.80	\$0.00	\$51.75
	12/01/2016	\$33.60	\$7.10	\$11.80	\$0.00	\$52.50

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - LABORER - Zone 2**

**Effective Date - 06/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$17.91	\$7.10	\$11.80	\$0.00	\$36.81
2	70	\$20.90	\$7.10	\$11.80	\$0.00	\$39.80
3	80	\$23.88	\$7.10	\$11.80	\$0.00	\$42.78
4	90	\$26.87	\$7.10	\$11.80	\$0.00	\$45.77

**Effective Date - 12/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$18.21	\$7.10	\$11.80	\$0.00	\$37.11
2	70	\$21.25	\$7.10	\$11.80	\$0.00	\$40.15
3	80	\$24.28	\$7.10	\$11.80	\$0.00	\$43.18
4	90	\$27.32	\$7.10	\$11.80	\$0.00	\$46.22

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

LABORER: CARPENTER TENDER LABORERS - ZONE 2	06/01/2013	\$29.85	\$7.10	\$11.80	\$0.00	\$48.75
	12/01/2013	\$30.35	\$7.10	\$11.80	\$0.00	\$49.25
	06/01/2014	\$30.85	\$7.10	\$11.80	\$0.00	\$49.75
	12/01/2014	\$31.35	\$7.10	\$11.80	\$0.00	\$50.25
	06/01/2015	\$31.85	\$7.10	\$11.80	\$0.00	\$50.75
	12/01/2015	\$32.35	\$7.10	\$11.80	\$0.00	\$51.25
	06/01/2016	\$32.85	\$7.10	\$11.80	\$0.00	\$51.75
	12/01/2016	\$33.60	\$7.10	\$11.80	\$0.00	\$52.50

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 2	06/01/2013	\$29.85	\$7.10	\$11.80	\$0.00	\$48.75
	12/01/2013	\$30.35	\$7.10	\$11.80	\$0.00	\$49.25
	06/01/2014	\$30.85	\$7.10	\$11.80	\$0.00	\$49.75
	12/01/2014	\$31.35	\$7.10	\$11.80	\$0.00	\$50.25
	06/01/2015	\$31.85	\$7.10	\$11.80	\$0.00	\$50.75
	12/01/2015	\$32.35	\$7.10	\$11.80	\$0.00	\$51.25
	06/01/2016	\$32.85	\$7.10	\$11.80	\$0.00	\$51.75
	12/01/2016	\$33.60	\$7.10	\$11.80	\$0.00	\$52.50

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 2	12/01/2011	\$29.35	\$7.10	\$11.55	\$0.00	\$48.00
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For apprentice rates see "Apprentice- LABORER"



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	06/01/2013	\$29.85	\$7.10	\$11.80	\$0.00	\$48.75
	12/01/2013	\$30.35	\$7.10	\$11.80	\$0.00	\$49.25
	06/01/2014	\$30.85	\$7.10	\$11.80	\$0.00	\$49.75
	12/01/2014	\$31.35	\$7.10	\$11.80	\$0.00	\$50.25
	06/01/2015	\$31.85	\$7.10	\$11.80	\$0.00	\$50.75
	12/01/2015	\$32.35	\$7.10	\$11.80	\$0.00	\$51.25
	06/01/2016	\$32.85	\$7.10	\$11.80	\$0.00	\$51.75
	12/01/2016	\$33.60	\$7.10	\$11.80	\$0.00	\$52.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	06/01/2013	\$29.85	\$7.10	\$11.80	\$0.00	\$48.75
	12/01/2013	\$30.35	\$7.10	\$11.80	\$0.00	\$49.25
	06/01/2014	\$30.85	\$7.10	\$11.80	\$0.00	\$49.75
	12/01/2014	\$31.35	\$7.10	\$11.80	\$0.00	\$50.25
	06/01/2015	\$31.85	\$7.10	\$11.80	\$0.00	\$50.75
	12/01/2015	\$32.35	\$7.10	\$11.80	\$0.00	\$51.25
	06/01/2016	\$32.85	\$7.10	\$11.80	\$0.00	\$51.75
	12/01/2016	\$33.60	\$7.10	\$11.80	\$0.00	\$52.50
This classification applies to the wholesale removal of standing trees including all associated trimming of branches and limbs, and applies to the removal of branches at locations not on or around utility lines. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2013	\$36.20	\$10.18	\$16.51	\$0.00	\$62.89
	08/01/2013	\$36.66	\$10.18	\$16.83	\$0.00	\$63.67
	02/01/2014	\$37.11	\$10.18	\$16.83	\$0.00	\$64.12
	08/01/2014	\$37.82	\$10.18	\$16.90	\$0.00	\$64.90
	02/01/2015	\$38.27	\$10.18	\$16.90	\$0.00	\$65.35
	08/01/2015	\$38.98	\$10.18	\$16.97	\$0.00	\$66.13
	02/01/2016	\$39.43	\$10.18	\$16.97	\$0.00	\$66.58
	08/01/2016	\$40.13	\$10.18	\$17.05	\$0.00	\$67.36
	02/01/2017	\$40.59	\$10.18	\$17.05	\$0.00	\$67.82

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

**Effective Date - 02/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.10	\$10.18	\$16.51	\$0.00	\$44.79
2	60	\$21.72	\$10.18	\$16.51	\$0.00	\$48.41
3	70	\$25.34	\$10.18	\$16.51	\$0.00	\$52.03
4	80	\$28.96	\$10.18	\$16.51	\$0.00	\$55.65
5	90	\$32.58	\$10.18	\$16.51	\$0.00	\$59.27

**Effective Date - 08/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.33	\$10.18	\$16.83	\$0.00	\$45.34
2	60	\$22.00	\$10.18	\$16.83	\$0.00	\$49.01
3	70	\$25.66	\$10.18	\$16.83	\$0.00	\$52.67
4	80	\$29.33	\$10.18	\$16.83	\$0.00	\$56.34
5	90	\$32.99	\$10.18	\$16.83	\$0.00	\$60.00

**Notes:**

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**Apprentice to Journeyworker Ratio:1:3**

MARBLE MASONS, TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 - MARBLE & TILE	02/01/2013	\$47.45	\$10.18	\$17.83	\$0.00	\$75.46
	08/01/2013	\$48.10	\$10.18	\$18.15	\$0.00	\$76.43
	02/01/2014	\$48.66	\$10.18	\$18.15	\$0.00	\$76.99
	08/01/2014	\$49.56	\$10.18	\$18.22	\$0.00	\$77.96
	02/01/2015	\$50.12	\$10.18	\$18.22	\$0.00	\$78.52
	08/01/2015	\$51.02	\$10.18	\$18.29	\$0.00	\$79.49
	02/01/2016	\$51.59	\$10.18	\$18.29	\$0.00	\$80.06
	08/01/2016	\$52.49	\$10.18	\$18.37	\$0.00	\$81.04
	02/01/2017	\$53.06	\$10.18	\$18.37	\$0.00	\$81.61

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

**Effective Date - 02/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.73	\$10.18	\$17.83	\$0.00	\$51.74
2	60	\$28.47	\$10.18	\$17.83	\$0.00	\$56.48
3	70	\$33.22	\$10.18	\$17.83	\$0.00	\$61.23
4	80	\$37.96	\$10.18	\$17.83	\$0.00	\$65.97
5	90	\$42.71	\$10.18	\$17.83	\$0.00	\$70.72

**Effective Date - 08/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.05	\$10.18	\$18.15	\$0.00	\$52.38
2	60	\$28.86	\$10.18	\$18.15	\$0.00	\$57.19
3	70	\$33.67	\$10.18	\$18.15	\$0.00	\$62.00
4	80	\$38.48	\$10.18	\$18.15	\$0.00	\$66.81
5	90	\$43.29	\$10.18	\$18.15	\$0.00	\$71.62

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	04/01/2013	\$32.47	\$9.80	\$15.76	\$0.00	\$58.03
	10/01/2013	\$33.06	\$9.80	\$15.76	\$0.00	\$58.62
	04/01/2014	\$33.66	\$9.80	\$15.76	\$0.00	\$59.22
	10/01/2014	\$34.42	\$9.80	\$15.76	\$0.00	\$59.98
	04/01/2015	\$35.19	\$9.80	\$15.76	\$0.00	\$60.75

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - MILLWRIGHT - Local 1121 Zone 2**

**Effective Date - 04/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$17.86	\$9.80	\$4.32	\$0.00	\$31.98
2	65	\$21.11	\$9.80	\$13.01	\$0.00	\$43.92
3	75	\$24.35	\$9.80	\$13.80	\$0.00	\$47.95
4	85	\$27.60	\$9.80	\$14.58	\$0.00	\$51.98

**Effective Date - 10/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$18.18	\$9.80	\$4.32	\$0.00	\$32.30
2	65	\$21.49	\$9.80	\$13.01	\$0.00	\$44.30
3	75	\$24.80	\$9.80	\$13.80	\$0.00	\$48.40
4	85	\$28.10	\$9.80	\$14.58	\$0.00	\$52.48

**Notes:**

Steps are 2,000 hours

**Apprentice to Journeyworker Ratio:1:5**

MORTAR MIXER LABORERS - ZONE 2	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2013	\$21.17	\$10.00	\$13.55	\$0.00	\$44.72
	12/01/2013	\$21.59	\$10.00	\$13.55	\$0.00	\$45.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2013	\$24.57	\$10.00	\$13.55	\$0.00	\$48.12
	12/01/2013	\$25.06	\$10.00	\$13.55	\$0.00	\$48.61
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	01/01/2013	\$45.01	\$7.80	\$15.60	\$0.00	\$68.41



**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint**

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.99	\$7.80	\$0.00	\$0.00	\$24.79
2	55	\$18.68	\$7.80	\$3.52	\$0.00	\$30.00
3	60	\$20.38	\$7.80	\$3.84	\$0.00	\$32.02
4	65	\$22.08	\$7.80	\$4.16	\$0.00	\$34.04
5	70	\$23.78	\$7.80	\$13.68	\$0.00	\$45.26
6	75	\$25.48	\$7.80	\$14.00	\$0.00	\$47.28
7	80	\$27.18	\$7.80	\$14.32	\$0.00	\$49.30
8	90	\$30.57	\$7.80	\$14.96	\$0.00	\$53.33

**Notes:**

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (TRAFFIC MARKINGS) LABORERS - ZONE 2	06/01/2013	\$29.85	\$7.10	\$11.80	\$0.00	\$48.75
	12/01/2013	\$30.35	\$7.10	\$11.80	\$0.00	\$49.25
	06/01/2014	\$30.85	\$7.10	\$11.80	\$0.00	\$49.75
	12/01/2014	\$31.35	\$7.10	\$11.80	\$0.00	\$50.25
	06/01/2015	\$31.85	\$7.10	\$11.80	\$0.00	\$50.75
	12/01/2015	\$32.35	\$7.10	\$11.80	\$0.00	\$51.25
	06/01/2016	\$32.85	\$7.10	\$11.80	\$0.00	\$51.75
	12/01/2016	\$33.60	\$7.10	\$11.80	\$0.00	\$52.50

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	01/01/2013	\$34.51	\$7.80	\$15.60	\$0.00	\$57.91
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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 - BRUSH NEW**

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.26	\$7.80	\$0.00	\$0.00	\$25.06
2	55	\$18.98	\$7.80	\$3.52	\$0.00	\$30.30
3	60	\$20.71	\$7.80	\$3.84	\$0.00	\$32.35
4	65	\$22.43	\$7.80	\$4.16	\$0.00	\$34.39
5	70	\$24.16	\$7.80	\$13.68	\$0.00	\$45.64
6	75	\$25.88	\$7.80	\$14.00	\$0.00	\$47.68
7	80	\$27.61	\$7.80	\$14.32	\$0.00	\$49.73
8	90	\$31.06	\$7.80	\$14.96	\$0.00	\$53.82

**Notes:**  
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Painter / Taper (BRUSH, REPAINT) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2013	\$32.57	\$7.80	\$15.60	\$0.00	\$55.97

**Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT**

**Effective Date -** 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.29	\$7.80	\$0.00	\$0.00	\$24.09
2	55	\$17.91	\$7.80	\$3.52	\$0.00	\$29.23
3	60	\$19.54	\$7.80	\$3.84	\$0.00	\$31.18
4	65	\$21.17	\$7.80	\$4.16	\$0.00	\$33.13
5	70	\$22.80	\$7.80	\$13.68	\$0.00	\$44.28
6	75	\$24.43	\$7.80	\$14.00	\$0.00	\$46.23
7	80	\$26.06	\$7.80	\$14.32	\$0.00	\$48.18
8	90	\$29.31	\$7.80	\$14.96	\$0.00	\$52.07

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$30.28	\$9.07	\$8.00	\$0.00	\$47.35
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$39.20	\$9.80	\$17.67	\$0.00	\$66.67
	08/01/2013	\$40.70	\$9.80	\$17.67	\$0.00	\$68.17
	08/01/2014	\$42.20	\$9.80	\$17.67	\$0.00	\$69.67
	08/01/2015	\$43.70	\$9.80	\$17.67	\$0.00	\$71.17
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$39.20	\$9.80	\$17.67	\$0.00	\$66.67
	08/01/2013	\$40.70	\$9.80	\$17.67	\$0.00	\$68.17
	08/01/2014	\$42.20	\$9.80	\$17.67	\$0.00	\$69.67
	08/01/2015	\$43.70	\$9.80	\$17.67	\$0.00	\$71.17

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PILE DRIVER - Local 56 Zone 1**

**Effective Date - 08/01/2012**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.60	\$9.80	\$17.67	\$0.00	\$47.07
2	60	\$23.52	\$9.80	\$17.67	\$0.00	\$50.99
3	70	\$27.44	\$9.80	\$17.67	\$0.00	\$54.91
4	75	\$29.40	\$9.80	\$17.67	\$0.00	\$56.87
5	80	\$31.36	\$9.80	\$17.67	\$0.00	\$58.83
6	80	\$31.36	\$9.80	\$17.67	\$0.00	\$58.83
7	90	\$35.28	\$9.80	\$17.67	\$0.00	\$62.75
8	90	\$35.28	\$9.80	\$17.67	\$0.00	\$62.75

**Effective Date - 08/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.35	\$9.80	\$17.67	\$0.00	\$47.82
2	60	\$24.42	\$9.80	\$17.67	\$0.00	\$51.89
3	70	\$28.49	\$9.80	\$17.67	\$0.00	\$55.96
4	75	\$30.53	\$9.80	\$17.67	\$0.00	\$58.00
5	80	\$32.56	\$9.80	\$17.67	\$0.00	\$60.03
6	80	\$32.56	\$9.80	\$17.67	\$0.00	\$60.03
7	90	\$36.63	\$9.80	\$17.67	\$0.00	\$64.10
8	90	\$36.63	\$9.80	\$17.67	\$0.00	\$64.10

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

PIPEFITTER & STEAMFITTER PIPEFITTERS LOCAL 537 (Local 138)	03/01/2013	\$47.01	\$8.75	\$12.39	\$0.00	\$68.15
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**Apprentice - PIPEFITTER Local 537 (Local 138)**

**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.80	\$8.75	\$4.50	\$0.00	\$32.05
2	45	\$21.15	\$8.75	\$12.39	\$0.00	\$42.29
3	60	\$28.21	\$8.75	\$12.39	\$0.00	\$49.35
4	70	\$32.91	\$8.75	\$12.39	\$0.00	\$54.05
5	80	\$37.61	\$8.75	\$12.39	\$0.00	\$58.75

**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:\*\***



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
PLUMBER <i>PLUMBERS &amp; GASFITTERS LOCAL 12 (Local 138)</i>	03/01/2013	\$45.23	\$9.32	\$13.29	\$0.00	\$67.84

**Apprentice - PLUMBER/GASFITTER - Local 12 (Local 138)**

**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$15.83	\$9.32	\$4.97	\$0.00	\$30.12
2	40	\$18.09	\$9.32	\$5.61	\$0.00	\$33.02
3	55	\$24.88	\$9.32	\$7.53	\$0.00	\$41.73
4	65	\$29.40	\$9.32	\$8.81	\$0.00	\$47.53
5	75	\$33.92	\$9.32	\$10.09	\$0.00	\$53.33

**Notes:**

Steps are 1 yr  
Step 4 with lic\$50.43 Step5 with lic\$56.22

**Apprentice to Journeyworker Ratio:1:5**

PNEUMATIC CONTROLS (TEMP.) <i>PIPEFITTERS LOCAL 537 (Local 138)</i>	03/01/2013	\$47.01	\$8.75	\$12.39	\$0.00	\$68.15
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.85	\$7.10	\$11.80	\$0.00	\$49.75
	12/01/2013	\$31.35	\$7.10	\$11.80	\$0.00	\$50.25
	06/01/2014	\$31.85	\$7.10	\$11.80	\$0.00	\$50.75
	12/01/2014	\$32.35	\$7.10	\$11.80	\$0.00	\$51.25
	06/01/2015	\$32.85	\$7.10	\$11.80	\$0.00	\$51.75
	12/01/2015	\$33.35	\$7.10	\$11.80	\$0.00	\$52.25
	06/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
	12/01/2016	\$34.60	\$7.10	\$11.80	\$0.00	\$53.50
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$28.19	\$10.00	\$13.55	\$0.00	\$51.74
	12/01/2013	\$28.74	\$10.00	\$13.55	\$0.00	\$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 42</i>	04/30/2009	\$25.80	\$5.96	\$5.34	\$0.00	\$37.10
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	04/01/2011	\$24.24	\$8.67	\$15.51	\$0.00	\$48.42
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	05/01/2011	\$24.24	\$6.34	\$6.23	\$0.00	\$36.81
As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofing Waterproofing &Roofing Damproofing) <i>ROOFERS LOCAL 33</i>	02/01/2013	\$37.41	\$10.50	\$10.70	\$0.00	\$58.61

**Apprentice - ROOFER - Local 33**

**Effective Date - 02/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.71	\$10.50	\$3.38	\$0.00	\$32.59
2	60	\$22.45	\$10.50	\$10.70	\$0.00	\$43.65
3	65	\$24.32	\$10.50	\$10.70	\$0.00	\$45.52
4	75	\$28.06	\$10.50	\$10.70	\$0.00	\$49.26
5	85	\$31.80	\$10.50	\$10.70	\$0.00	\$53.00

**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.

**Apprentice to Journeyworker Ratio:\*\***

ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 33</i>	02/01/2013	\$37.66	\$10.50	\$10.70	\$0.00	\$58.86
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For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2013	\$42.32	\$9.82	\$18.24	\$2.11	\$72.49
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**Apprentice - SHEET METAL WORKER - Local 17-A**

**Effective Date - 02/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.93	\$9.82	\$4.00	\$0.00	\$30.75
2	40	\$16.93	\$9.82	\$4.00	\$0.00	\$30.75
3	45	\$19.04	\$9.82	\$8.00	\$1.11	\$37.97
4	45	\$19.04	\$9.82	\$8.00	\$1.11	\$37.97
5	50	\$21.16	\$9.82	\$8.75	\$1.19	\$40.92
6	50	\$21.16	\$9.82	\$9.00	\$1.20	\$41.18
7	60	\$25.39	\$9.82	\$10.24	\$1.36	\$46.81
8	65	\$27.51	\$9.82	\$10.99	\$1.45	\$49.77
9	75	\$31.74	\$9.82	\$12.49	\$1.62	\$55.67
10	85	\$35.97	\$9.82	\$13.49	\$1.78	\$61.06

**Notes:**  
Steps are 6 mos.

**Apprentice to Journeyworker Ratio:1:4**

SIGN ERECTOR <i>PAINTERS LOCAL 35 - ZONE 2</i>	06/01/2013	\$25.81	\$7.07	\$7.05	\$0.00	\$39.93
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**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - SIGN ERECTOR - Local 35 Zone 2**

**Effective Date - 06/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$12.91	\$7.07	\$0.00	\$0.00	\$19.98
2	55	\$14.20	\$7.07	\$2.45	\$0.00	\$23.72
3	60	\$15.49	\$7.07	\$2.45	\$0.00	\$25.01
4	65	\$16.78	\$7.07	\$2.45	\$0.00	\$26.30
5	70	\$18.07	\$7.07	\$7.05	\$0.00	\$32.19
6	75	\$19.36	\$7.07	\$7.05	\$0.00	\$33.48
7	80	\$20.65	\$7.07	\$7.05	\$0.00	\$34.77
8	85	\$21.94	\$7.07	\$7.05	\$0.00	\$36.06
9	90	\$23.23	\$7.07	\$7.05	\$0.00	\$37.35

**Notes:**  
Steps are 4 mos.

**Apprentice to Journeyworker Ratio:1:1**

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$30.74	\$8.91	\$8.00	\$0.00	\$47.65
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$31.03	\$8.91	\$8.00	\$0.00	\$47.94
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section B)</i>	03/01/2013	\$48.13	\$8.42	\$12.60	\$0.00	\$69.15

**Apprentice - SPRINKLER FITTER - Local 550 (Section B)**

**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$16.85	\$8.42	\$8.00	\$0.00	\$33.27
2	40	\$19.25	\$8.42	\$8.00	\$0.00	\$35.67
3	45	\$21.66	\$8.42	\$8.00	\$0.00	\$38.08
4	50	\$24.07	\$8.42	\$8.00	\$0.00	\$40.49
5	55	\$26.47	\$8.42	\$8.00	\$0.00	\$42.89
6	60	\$28.88	\$8.42	\$8.00	\$0.00	\$45.30
7	65	\$31.28	\$8.42	\$8.00	\$0.00	\$47.70
8	70	\$33.69	\$8.42	\$8.00	\$0.00	\$50.11
9	75	\$36.10	\$8.42	\$8.00	\$0.00	\$52.52
10	80	\$38.50	\$8.42	\$8.00	\$0.00	\$54.92

**Notes:**  
Steps are 850 hours

**Apprentice to Journeyworker Ratio:1:1**

STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN OPERATING ENGINEERS LOCAL 4	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN ELECTRICIANS LOCAL 103	03/01/2013	\$32.64	\$13.00	\$12.51	\$0.00	\$58.15
	09/01/2013	\$33.15	\$13.00	\$12.52	\$0.00	\$58.67
	03/01/2014	\$33.69	\$13.00	\$12.54	\$0.00	\$59.23
	09/01/2014	\$34.20	\$13.00	\$12.56	\$0.00	\$59.76
	03/01/2015	\$34.74	\$13.00	\$12.57	\$0.00	\$60.31
	09/01/2015	\$35.45	\$13.00	\$12.59	\$0.00	\$61.04
	03/01/2016	\$36.17	\$13.00	\$12.62	\$0.00	\$61.79

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103**

**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.06	\$13.00	\$0.39	\$0.00	\$26.45
2	40	\$13.06	\$13.00	\$0.39	\$0.00	\$26.45
3	45	\$14.69	\$13.00	\$10.77	\$0.00	\$38.46
4	45	\$14.69	\$13.00	\$10.77	\$0.00	\$38.46
5	50	\$16.32	\$13.00	\$11.02	\$0.00	\$40.34
6	55	\$17.95	\$13.00	\$11.27	\$0.00	\$42.22
7	60	\$19.58	\$13.00	\$11.52	\$0.00	\$44.10
8	65	\$21.22	\$13.00	\$11.77	\$0.00	\$45.99
9	70	\$22.85	\$13.00	\$12.02	\$0.00	\$47.87
10	75	\$24.48	\$13.00	\$12.26	\$0.00	\$49.74

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.26	\$13.00	\$0.40	\$0.00	\$26.66
2	40	\$13.26	\$13.00	\$0.40	\$0.00	\$26.66
3	45	\$14.92	\$13.00	\$9.79	\$0.00	\$37.71
4	45	\$14.92	\$13.00	\$9.79	\$0.00	\$37.71
5	50	\$16.58	\$13.00	\$10.04	\$0.00	\$39.62
6	55	\$18.23	\$13.00	\$10.29	\$0.00	\$41.52
7	60	\$19.89	\$13.00	\$10.54	\$0.00	\$43.43
8	65	\$21.55	\$13.00	\$10.79	\$0.00	\$45.34
9	70	\$23.21	\$13.00	\$11.04	\$0.00	\$47.25
10	75	\$24.86	\$13.00	\$11.29	\$0.00	\$49.15

**Notes:**

**Apprentice to Journeyworker Ratio:1:1**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2013	\$46.35	\$10.18	\$17.83	\$0.00	\$74.36
	08/01/2013	\$47.00	\$10.18	\$18.15	\$0.00	\$75.33
	02/01/2014	\$47.56	\$10.18	\$18.15	\$0.00	\$75.89
	08/01/2014	\$48.46	\$10.18	\$18.22	\$0.00	\$76.86
	02/01/2015	\$49.02	\$10.18	\$18.22	\$0.00	\$77.42
	08/01/2015	\$49.92	\$10.18	\$18.29	\$0.00	\$78.39
	02/01/2016	\$50.49	\$10.18	\$18.29	\$0.00	\$78.96
	08/01/2016	\$51.39	\$10.18	\$18.37	\$0.00	\$79.94
	02/01/2017	\$51.96	\$10.18	\$18.37	\$0.00	\$80.51

**Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile**

**Effective Date - 02/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.18	\$10.18	\$17.83	\$0.00	\$51.19
2	60	\$27.81	\$10.18	\$17.83	\$0.00	\$55.82
3	70	\$32.45	\$10.18	\$17.83	\$0.00	\$60.46
4	80	\$37.08	\$10.18	\$17.83	\$0.00	\$65.09
5	90	\$41.72	\$10.18	\$17.83	\$0.00	\$69.73

**Effective Date - 08/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.50	\$10.18	\$18.15	\$0.00	\$51.83
2	60	\$28.20	\$10.18	\$18.15	\$0.00	\$56.53
3	70	\$32.90	\$10.18	\$18.15	\$0.00	\$61.23
4	80	\$37.60	\$10.18	\$18.15	\$0.00	\$65.93
5	90	\$42.30	\$10.18	\$18.15	\$0.00	\$70.63

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$34.45	\$7.10	\$12.60	\$0.00	\$54.15
	12/01/2013	\$35.20	\$7.10	\$12.60	\$0.00	\$54.90
	06/01/2014	\$35.95	\$7.10	\$12.60	\$0.00	\$55.65
	12/01/2014	\$36.70	\$7.10	\$12.60	\$0.00	\$56.40
	06/01/2015	\$37.45	\$7.10	\$12.60	\$0.00	\$57.15
	12/01/2015	\$38.20	\$7.10	\$12.60	\$0.00	\$57.90
	06/01/2016	\$38.95	\$7.10	\$12.60	\$0.00	\$58.65
	12/01/2016	\$39.95	\$7.10	\$12.60	\$0.00	\$59.65

For apprentice rates see "Apprentice- LABORER"

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$33.17	\$7.10	\$12.60	\$0.00	\$52.87
	12/01/2013	\$33.92	\$7.10	\$12.60	\$0.00	\$53.62
	06/01/2014	\$34.67	\$7.10	\$12.60	\$0.00	\$54.37
	12/01/2014	\$35.42	\$7.10	\$12.60	\$0.00	\$55.12
	06/01/2015	\$36.17	\$7.10	\$12.60	\$0.00	\$55.87
	12/01/2015	\$36.92	\$7.10	\$12.60	\$0.00	\$56.62
	06/01/2016	\$37.67	\$7.10	\$12.60	\$0.00	\$57.37
	12/01/2016	\$38.67	\$7.10	\$12.60	\$0.00	\$58.37
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$33.05	\$7.10	\$12.60	\$0.00	\$52.75
	12/01/2013	\$33.80	\$7.10	\$12.60	\$0.00	\$53.50
	06/01/2014	\$34.55	\$7.10	\$12.60	\$0.00	\$54.25
	12/01/2014	\$35.30	\$7.10	\$12.60	\$0.00	\$55.00
	06/01/2015	\$36.05	\$7.10	\$12.60	\$0.00	\$55.75
	12/01/2015	\$36.80	\$7.10	\$12.60	\$0.00	\$56.50
	06/01/2016	\$37.55	\$7.10	\$12.60	\$0.00	\$57.25
	12/01/2016	\$38.55	\$7.10	\$12.60	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$31.32	\$8.91	\$8.00	\$0.00	\$48.23
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2013	\$45.33	\$7.10	\$13.00	\$0.00	\$65.43
	12/01/2013	\$46.08	\$7.10	\$13.00	\$0.00	\$66.18
	06/01/2014	\$46.83	\$7.10	\$13.00	\$0.00	\$66.93
	12/01/2014	\$47.58	\$7.10	\$13.00	\$0.00	\$67.68
	06/01/2015	\$48.33	\$7.10	\$13.00	\$0.00	\$68.43
	12/01/2015	\$49.08	\$7.10	\$13.00	\$0.00	\$69.18
	06/01/2016	\$49.83	\$7.10	\$13.00	\$0.00	\$69.93
	12/01/2016	\$50.83	\$7.10	\$13.00	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2013	\$47.33	\$7.10	\$13.00	\$0.00	\$67.43
	12/01/2013	\$48.08	\$7.10	\$13.00	\$0.00	\$68.18
	06/01/2014	\$48.83	\$7.10	\$13.00	\$0.00	\$68.93
	12/01/2014	\$49.58	\$7.10	\$13.00	\$0.00	\$69.68
	06/01/2015	\$50.33	\$7.10	\$13.00	\$0.00	\$70.43
	12/01/2015	\$51.08	\$7.10	\$13.00	\$0.00	\$71.18
	06/01/2016	\$51.83	\$7.10	\$13.00	\$0.00	\$71.93
	12/01/2016	\$52.83	\$7.10	\$13.00	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2013	\$37.40	\$7.10	\$13.00	\$0.00	\$57.50
	12/01/2013	\$38.15	\$7.10	\$13.00	\$0.00	\$58.25
	06/01/2014	\$38.90	\$7.10	\$13.00	\$0.00	\$59.00
	12/01/2014	\$39.65	\$7.10	\$13.00	\$0.00	\$59.75
	06/01/2015	\$40.40	\$7.10	\$13.00	\$0.00	\$60.50
	12/01/2015	\$41.15	\$7.10	\$13.00	\$0.00	\$61.25
	06/01/2016	\$41.90	\$7.10	\$13.00	\$0.00	\$62.00
	12/01/2016	\$42.90	\$7.10	\$13.00	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2013	\$39.40	\$7.10	\$13.00	\$0.00	\$59.50
	12/01/2013	\$40.15	\$7.10	\$13.00	\$0.00	\$60.25
	06/01/2014	\$40.90	\$7.10	\$13.00	\$0.00	\$61.00
	12/01/2014	\$41.65	\$7.10	\$13.00	\$0.00	\$61.75
	06/01/2015	\$42.40	\$7.10	\$13.00	\$0.00	\$62.50
	12/01/2015	\$43.15	\$7.10	\$13.00	\$0.00	\$63.25
	06/01/2016	\$43.90	\$7.10	\$13.00	\$0.00	\$64.00
	12/01/2016	\$44.90	\$7.10	\$13.00	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$30.74	\$8.91	\$8.00	\$0.00	\$47.65
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2013	\$30.10	\$7.10	\$11.80	\$0.00	\$49.00
	12/01/2013	\$30.60	\$7.10	\$11.80	\$0.00	\$49.50
	06/01/2014	\$31.10	\$7.10	\$11.80	\$0.00	\$50.00
	12/01/2014	\$31.60	\$7.10	\$11.80	\$0.00	\$50.50
	06/01/2015	\$32.10	\$7.10	\$11.80	\$0.00	\$51.00
	12/01/2015	\$32.60	\$7.10	\$11.80	\$0.00	\$51.50
	06/01/2016	\$33.10	\$7.10	\$11.80	\$0.00	\$52.00
	12/01/2016	\$33.85	\$7.10	\$11.80	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS &amp; GASFITTERS LOCAL 12 (Local 138)</i>	03/01/2013	\$45.23	\$9.32	\$13.29	\$0.00	\$67.84
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
<b>Outside Electrical - East</b>						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$25.18	\$8.20	\$4.17	\$0.00	\$37.55
	09/01/2013	\$25.66	\$8.70	\$4.48	\$0.00	\$38.84
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$35.67	\$8.20	\$4.98	\$0.00	\$48.85
	09/01/2013	\$36.55	\$8.70	\$6.58	\$0.00	\$51.83
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$29.38	\$8.20	\$5.68	\$0.00	\$43.26
	09/01/2013	\$29.94	\$8.70	\$6.05	\$0.00	\$44.69
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$23.08	\$8.20	\$3.94	\$0.00	\$35.22
	09/01/2013	\$23.52	\$8.70	\$5.24	\$0.00	\$37.46
For apprentice rates see "Apprentice- LINEMAN"						



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$35.67	\$8.20	\$8.98	\$0.00	\$52.85
	09/01/2013	\$36.35	\$8.70	\$9.43	\$0.00	\$54.48
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$31.48	\$8.20	\$6.19	\$0.00	\$45.87
	09/01/2013	\$32.08	\$8.70	\$6.59	\$0.00	\$47.37
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$23.08	\$8.20	\$3.42	\$0.00	\$34.70
	09/01/2013	\$23.52	\$8.70	\$3.72	\$0.00	\$35.94
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$18.89	\$8.20	\$2.61	\$0.00	\$29.70
	09/01/2013	\$19.25	\$8.70	\$2.85	\$0.00	\$30.80
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$41.97	\$8.20	\$11.26	\$0.00	\$61.43
	09/01/2013	\$42.77	\$8.70	\$11.78	\$0.00	\$63.25

**Apprentice - LINEMAN (Outside Electrical) - East Local 104**

**Effective Date - 03/03/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$25.18	\$8.20	\$3.92	\$0.00	\$37.30
2	65	\$27.28	\$8.20	\$4.36	\$0.00	\$39.84
3	70	\$29.38	\$8.20	\$5.06	\$0.00	\$42.64
4	75	\$31.48	\$8.20	\$5.76	\$0.00	\$45.44
5	80	\$33.58	\$8.20	\$6.46	\$0.00	\$48.24
6	85	\$35.67	\$8.20	\$7.17	\$0.00	\$51.04
7	90	\$37.77	\$8.20	\$8.36	\$0.00	\$54.33

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$25.66	\$8.70	\$4.24	\$0.00	\$38.60
2	65	\$27.80	\$8.70	\$4.71	\$0.00	\$41.21
3	70	\$29.94	\$8.70	\$5.43	\$0.00	\$44.07
4	75	\$32.08	\$8.70	\$6.16	\$0.00	\$46.94
5	80	\$34.22	\$8.70	\$6.88	\$0.00	\$49.80
6	85	\$36.35	\$8.70	\$7.62	\$0.00	\$52.67
7	90	\$38.49	\$8.70	\$8.83	\$0.00	\$56.02

**Notes:**

**Apprentice to Journeyworker Ratio:1:2**

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$26.33	\$4.18	\$2.79	\$0.00	\$33.30
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  This classification applies only to the trimming of branches on and around utility lines.	01/29/2012	\$17.18	\$3.37	\$0.00	\$0.00	\$20.55
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  This classification applies only to the trimming of branches on and around utility lines.	01/29/2012	\$15.15	\$3.37	\$0.00	\$0.00	\$18.52

Additional Apprentices 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) unless otherwise specified.

- \* Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.
- \*\* 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.

**PLANS**  
**(DATED JULY 15, 2013)**

1. **SEE ATTACHMENT A**



**SPECIFICATIONS**  
**(DATED JULY 15, 2013)**

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SEE ATTACHMENT B

# **ATTACHMENT B**

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**SECTION 01010**  
**SUMMARY OF WORK**

**PART 1 - GENERAL**

**1.01 REQUIREMENTS INCLUDED**

- A. Description of Work.
- B. Contract type.
- C. Work sequence.
- D. Project Conditions.
- E. Use of premises.

**1.02 DESCRIPTION OF WORK**

- A. The Work will include, but is not limited to, roadway and sidewalk improvements for the entire length of Merrill Street, approximately 750-feet in length, including intersection improvements at Merrimac Street, Russia Street, and Congress Street within the limits of work, as shown on the Plans and stated in the Specifications. The Work includes the replacement of the water, sanitary sewer, and storm drain utility systems including service connections to abutting properties; replacement of sidewalks and portions of driveways with cement concrete, asphalt, and brick/unit pavers; replacement of curbing with granite curb; reconstruction of roadways and intersections; reconstruction of low retaining walls and fencing in-kind; disposal of unsuitable and waste materials; removal, transporting, and stacking of materials to be retained by the City; replacement of roadway signage; compliance with applicable federal, state, and local standards and regulations, including but not limited to, MDOT, American with Disabilities Act (ADA), National Pollutant Discharge Elimination System (NPDES), and City of Newburyport Department of Public Services (DPS); traffic management; and, erosion control.
- B. Contractor shall obtain a permit for excavation of trenches from the DPS and otherwise comply with 520 CMR 14.00.
- C. The work done under this Contract shall be in conformance with the Massachusetts Department of Transportation-Highway Division latest editions of the STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, and all SUPPLEMENTAL SPECIFICATIONS, MASSDOT ENGINEERING DIRECTIVES, CONSTRUCTION STANDARD DETAILS, THE STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, and THE WORK ZONE SAFETY GUIDELINES, except as otherwise indicated in these Contract Documents (Drawings and/or Specifications). Any discrepancy between the aforementioned MDOT documents and these Contract Documents shall be brought to the attention of the Engineer for resolution prior to performing the work. The intention is to follow MDOT standards with few exceptions.
- D. All work in this contract shall conform to the rules and regulations of the ARCHITECTURAL ACCESS BOARD (521 CMR 1.00 et. seq.).



**1.03 CONTRACT TYPE**

- A. Construct the Work under a unit price contract.

**1.04 WORK SEQUENCE**

- A. Contractor shall provide a detailed construction schedule at the pre-construction meeting for discussion and review by the City. Priority shall be given to minimize closure of roadways and access to private properties.

**1.05 PROJECT CONDITIONS**

- A. Examination of Conditions: The Contractor shall be solely responsible for judging the full extent of work requirements involved, including but not limited to, the potential need for storing materials temporarily and/or rehandling items prior to final installation; space limitations within the Merrill Street right-of-way; protection of private properties, such as fencing, walls, and landscaping; and documenting with photographs or video of the condition of materials and properties to remain. Any damage to existing properties to-remain due to the Contractor's negligence shall be replaced or repaired to the satisfaction of the City at no cost to the Project. No claims shall be accepted by the City for issues related to the Contractor not properly examining the existing conditions prior to placing his/her Bid and/or performing the Work.
- B. Traffic: Conduct the Work to ensure minimum interference with roads, driveways, sidewalks, and other active facilities. Do not close or obstruct roads or active facilities without permission from the City.

**1.06 USE OF PREMISES**

- A. Contractor shall limit their use of premises for work, storage, and access, and shall allow:
  - 1. Owner occupancy on Owner's property.
  - 2. Normal public use of public property, right-of-ways, etc.
  - 3. Access to private property.
- B. Coordinate use of premises under direction of the Engineer.
- C. Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

Not used

END OF SECTION

**SECTION 01025**  
**MEASUREMENT AND PAYMENT**

**PART 1 - GENERAL**

**1.01 PROCEDURES**

- A. For unit price items, the Contractor shall be paid for the actual amount of Work accepted during the period of construction. After the Work is complete and before final payment is made, the Engineer shall make final measurements to determine the quantities of the various items of work accepted as the basis for final payment.
- B. For lump sum items, the Contractor shall be paid in accordance with the progress schedule and schedule of values on the basis of actual Work accepted until the work item is completed. Upon completion of the item, 100% of the lump sum price may be paid, less retained amounts.
- C. All units of measurement shall be standard United States convention as applied to the individual items of work as specified and as interpreted by the Engineer.
- D. At the end of each day's work or as otherwise agreed upon by the Engineer, the Contractor's superintendent or other authorized representative shall meet with the Resident Project Representative to determine the quantities of unit price and/or lump sum price work accomplished and/or completed during the work day.
- E. Once each month the Contractor shall prepare and sign an Application for Payment, and submit the original and two (2) copies for review and signature of the Resident Project Representative and the Engineer. These completed forms will provide the basis upon which payment will be made to the Contractor.

**1.02 SCOPE OF PAYMENT**

- A. Payments to the Contractor shall be made for the actual quantities of the contract unit price items performed and accepted in accordance with the Contract Documents. Upon completion of construction, if these actual quantities show either an increase or decrease from the quantities given in the Bid, the contract unit prices shall still prevail, except as provided elsewhere in the Contract Documents.
- B. No payment of any Application for Payment or of any retained percentage shall relieve the Contractor of his obligation to repair or replace any defective parts of the construction or to be responsible for all damage due to such defects during the construction period or the one-year correction period.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

**3.01 GENERAL**

- A. The items of work required by the General Conditions, Supplementary Conditions, Special Conditions, Division 1 of the Contract Documents, and any other Specification Section that

requires work to be performed but not specifically under any particular payment item shall not be measured nor paid separately, except as expressly indicated herein, but shall be included in the prices bid for each unit and lump sum item.

- B. The payment for unit and lump sum items shall include full compensation for the furnishing and providing of all materials, labor, tools, equipment, and all incidental work necessary for the satisfactory completion of the item in accordance with the Contract Documents and as directed by the Engineer whether or not the particular work is mentioned in the following paragraphs.

### **3.02 TREE AND STUMP REMOVED (ITEMS 1A AND 1B)**

- A. Measurement: Item 1A *Tree & Stump Removed (Under 24 Inch Diameter)* shall be measured per each tree greater than 9-inches in diameter at breast height (DBH) and less than 24-inches in DBH. Item 1B *Tree & Stump Removed (24 Inch Diameter & Over)* shall be measured per each tree greater than and equal to 24-inches in DBH.
- B. Payment: Payment will be made at the contract unit price per each tree and stump removed and shall be full compensation for removal and disposal of tree and stump and all incidentals necessary for the satisfactory completion of the work.

### **3.03 EXCAVATION (ITEMS 2A AND 2B)**

- A. Measurement: Per cubic yard of excavation measured in their original position by the cross section method or by other method agreed to by the Engineer, as shown on the Drawings or as directed by the Engineer and accepted by the City.  
Rock excavation shall be measured as defined in Section \_\_\_\_\_ to the following limits:
  - 1. Manholes and structures: 12-inches from outside limits of structure and 6-inches below the bottom of base or base slab.
  - 2. Pipe: 6-inches below pipe and the width of rock excavation shall be 2-feet plus pipe diameter.
  - 3. No allowance will be made for rock excavation beyond these specified lines.
- B. Payment: At the Contract Unit Price per cubic yard for the type of excavation to lines and grades as indicated on the Drawings or as directed by the Engineer and shall be full compensation for excavation and all incidentals necessary for the satisfactory completion of the work.
- C. Work included, all types:
  - 1. Excavation, removal and proper disposal of unsuitable materials.
  - 2. Compaction of subgrade or material not to be removed.

### **3.04 UTILITY STRUCTURES REMOVED OR ABANDONED (ITEMS 3A AND 3B)**

- A. Measurement: Per each structure, as shown on the Drawings or as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each and shall be full compensation for removal and disposal or abandonment and all incidentals necessary for the satisfactory completion of the work.

**3.05 GRAVEL BORROW (ITEM 4)**

- A. Measurement: Per cubic yard furnished and measured in-place and accepted by the City.
- B. Payment: At the Contract Unit Price per cubic yard and shall be full compensation for furnishing, placing, compacting, grading, sampling, testing, and all incidentals necessary for the satisfactory completion of the work.
- C. Work included:
  - 1. This item is for replacing any unsuitable materials encountered during the work, as directed and approved by the Engineer. Gravel base, such as under sidewalks, driveways, and wheel chair ramps, will not be paid for under this item but rather under those items for which gravel base is required.

**3.06 CRUSHED STONE FOR DRIVEWAYS (ITEM 5)**

- A. Measurement: Per ton furnished and measured in-place and accepted by the City.
- B. Payment: At the Contract Unit Price per ton and shall be full compensation for furnishing, placing, compacting, grading, sampling, testing, and all incidentals necessary for the satisfactory completion of the work.

**3.07 UTILITY STRUCTURES (ITEM 6, 7, 8, and 9)**

- A. Measurement: Per each structure, as shown on the Drawings or as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each type per each structure regardless of size and depth and shall be full compensation for the work and all incidentals necessary for the satisfactory completion of the work.
- C. Work included, all types:
  - 1. Excavation, dewatering, temporary control of flows including bypassing of sewage or stormwater as applicable, excavation support, gravel base, preparation of base, backfill, and compaction of subgrade and backfill materials.
  - 2. Furnishing, installing, and constructing structures, inverts, waterproof joints and pipe penetrations, waterproofing, sumps, and brick shelves including all materials required.
  - 3. Furnishing and setting of frames and covers, and frames and grates, including all materials required.
  - 4. Testing of sewer manholes.

**3.08 PIPING (ITEMS 10A, 10B, 11A, 11B, 11C, 12A, 12B, 13A, 13B, 15A, and 15B )**

- A. Measurement: Per linear foot, from face of structure to face of structure or to existing pipe or pipe end, as shown on the Drawings or as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per linear foot for the respective size and type of pipe installed and shall be full compensation for the work and all incidentals necessary for the satisfactory completion of the work.
- C. Work included, all types:
  - 1. Furnishing of all pipe and materials required for the work.

2. Excavation, saw cutting pavement, pavement excavation, disposal of excess materials, bedding, backfill, preparation of subgrade, compaction of subgrade and backfill materials, dewatering, temporary control of flows including bypassing of sewage or stormwater as applicable, and excavation support.
3. Installing piping, fittings, jointing, concrete thrust blocks, restraining mechanisms, and connecting to existing piping and structures.
4. Chlorination and testing of piping and all incidentals necessary to complete these items.
5. There will be no separate payment item for water pipe fittings and restraint mechanisms.

**3.09 TEMPORARY WATER SERVICE (ITEM 14)**

- A. Measurement: Per lump sum, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per lump sum and shall be full compensation for the work until the installation of the permanent water system has been completed, tested, and accepted by the City and approval has been granted by the City to remove the temporary water service.
- C. Work included, all types:
  1. Furnishing and installing of all pipe and materials required for the work.
  2. Excavation, saw cutting pavement, pavement excavation, disposal of excess materials, bedding, backfill, dewatering, temporary control of flows, and excavation support.
  3. Connections to all piping.
  4. Prevention from freezing and protection from damage, such as, by vehicles and construction equipment.
  5. Maintenance of temporary system, including disinfecting and water quality testing.

**3.10 WATER SERVICE CONNECTIONS (ITEM 16)**

- A. Measurement: Per each connection, as shown on the Drawings or as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each and shall be full compensation for furnishing, installing, connecting to existing piping and tubing, and all incidentals necessary including maintaining service connections until the installation of the permanent water system has been completed, tested, and accepted by the City and approval has been granted by the City to remove the temporary water service.

**3.11 GATE VALVE AND BOX (ITEMS 17A AND 17B)**

- A. Measurement: Per each, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each and shall be full compensation for furnishing and installing gate valve, box, cover, and all incidentals necessary for the satisfactory completion of the work.

**3.12 GATE BOX (ITEM 18)**

- A. Measurement: Per each, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each and shall be full compensation for furnishing and installing gate box, cover, and all incidentals necessary for the satisfactory completion of the work.

**3.13 GATE AND SERVICE BOXES ADJUSTED (ITEM 19A AND 19B)**

- A. Measurement: Per each, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each and shall be full compensation for temporary controls, sawcutting pavement, excavation, removal and disposal of excavated materials, adjusting castings, rebuilding adjustment ring, concrete, backfill, hot mix asphalt, compaction, and all incidentals necessary for the satisfactory completion of the work.

**3.14 HYDRANT (ITEM 20)**

- A. Measurement: Per each, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each and shall be full compensation for furnishing and installing hydrant, excavation, backfill, thrust blocks or mechanical thrust restraints as required or directed, and all incidentals necessary for the satisfactory completion of the work.

**3.15 HOT MIX ASPHALT (ITEMS 22A, 22B, 22C, AND 22D)**

- A. Measurement: Per ton and shall be the actual and verified tonnage, complete in-place to the depth shown on the Drawings, verified by weight slips signed by the Engineer at the time of delivery, and accepted by the City.
- B. Payment: At the Contract Unit Price per ton complete in-place and shall be full compensation for furnishing, placing, spreading, rolling, maintaining through the guaranteed period and all incidentals necessary for the satisfactory completion of the work.
- C. Bitumen used for prime/tack coat, if required, will be measured and paid for under a separate pay item.

**3.16 CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL (ITEM 23)**

- A. Measurement: Per pound of calcium chloride applied by bag measure, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per pound and shall be full compensation for furnishing and applying calcium chloride to the satisfaction of the Engineer.

**3.17 WATER FOR ROADWAY DUST CONTROL (ITEM 24)**

- A. Measurement: Per gallon of water applied, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per gallon and shall be full compensation for furnishing and applying the water to the satisfaction of the Engineer.

**3.18 BITUMEN FOR TACK COAT (ITEM 25)**

- A. Measurement: Per gallon of tack coat applied, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per gallon and shall be full compensation for furnishing and applying tack coat to the satisfaction of the Engineer.

**3.19 HOT POURED RUBBERIZED ASPHALT SEALER (ITEM 26)**

- A. Measurement: Per foot, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per foot and shall be full compensation for furnishing and installing the sealer to the satisfaction of the Engineer.

**3.20 SAWING ASPHALT PAVEMENT (ITEM 27)**

- A. Measurement: Per foot, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per foot of saw cut and shall be full compensation for saw cutting thru the entire thickness of asphalt and concrete pavements to the satisfaction of the Engineer.

**3.21 GRANITE CURBING (ITEMS 28A, 28B, 28C, AND 28D)**

- A. Measurement: Per linear foot in-place measured along the face of the curb for straight and curved sections as measured by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per linear foot in-place and shall be full compensation for excavation, disposal of excavated materials, preparing subgrade, furnishing and installing gravel base, concrete support, cutting curb when required, layout of curbing, furnishing and installing granite curb, mortar joints, backfill, compaction, and all incidentals necessary for the satisfactory completion of the work.

**3.22 GRANITE CURB SECTIONS (ITEMS 29A, 29B, AND 29C)**

- A. Measurement: Per each in-place per type of section, as accepted by the City.
- B. Payment: At the Contract Unit Price per each in-place per type of section and shall be full compensation for excavation, disposal of excavated materials, preparing subgrade, furnishing and installing gravel base, concrete support, furnishing and installing granite sections, mortar joints, backfill, compaction, and all incidentals necessary for the satisfactory completion of the work.

**3.23 CURB REMOVED AND STACKED (ITEM 30)**

- A. Measurement: Per linear foot measured along the face of the curbing as measured by the Engineer, as indicated on the Drawings and as directed by the Engineer.
- B. Payment: At the Contract Unit Price per linear foot and shall be full compensation for excavation, removal and transport of curbing, and stacking of curbing as directed by the Engineer.
- C. Curbing shall be delivered and stacked to the City's Fulton Pit located at the end of Fulton Street in Newburyport.

**3.24 48-INCH WOOD STOCKADE FENCE (ITEM 31)**

- A. Measurement: Per foot complete in-place, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per foot complete in-place and shall be full compensation for the removal and disposal of existing fence and all fence components, post excavation, furnishing and installing fence posts, post foundations, slats, cross members, and all fence components, and all incidentals necessary for the satisfactory completion of the work.

**3.25 STONE MASONRY WALL REMOVED & REBUILT IN CEMENT MORTAR (ITEM 32)**

- A. Measurement: Per cubic yard complete in-place, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per cubic yard complete in-place and shall be full compensation for the removal and temporary stockpiling of existing stone wall for reuse, removal of loose mortar and debris from stones, rebuilding of stone wall and foundation in-kind, furnishing and installing new stone as may be required, pointing, and cleaning, backfilling and compacting granular material behind the wall and for the foundation, furnishing and installing weep holes with filter fabric, loaming and seeding of impacted areas, and all incidentals necessary for the satisfactory completion of the work.
- C. **NOTE:** The wall shall not be removed until a test pit has been performed at the base of the wall to determine the depth of the existing wall beneath the new sidewalk grades. The wall shall not be removed nor replaced if a suitable depth of wall exists beneath the new sidewalk grade as determined by the Engineer.

**3.26 BLOCK WALL REMOVED & REBUILT (ITEM 33)**

- A. Measurement: Per linear foot complete in-place, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per linear foot complete in-place and shall be full compensation for the removal and temporary stockpiling of existing block wall for reuse, rebuilding of block wall, furnishing and installing additional new blocks as may be required, leveling, backfilling and compacting granular material behind the wall and for the foundation, loaming and seeding of impacted areas, and all incidentals necessary for the satisfactory completion of the work.
- C. **NOTE:** The wall shall not be removed until a test pit has been performed at the base of the wall to determine the depth of the existing wall beneath the new sidewalk grades. The wall shall not be removed nor replaced if a suitable depth of wall exists beneath the new sidewalk grade as determined by the Engineer.

**3.27 CONCRETE SIDEWALKS AND WHEEL CHAIR RAMPS (ITEMS 34A, 34B, AND 34C)**

- A. Measurement: Per square yard complete in-place at the dimensions shown on the Drawings, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per square yard complete in-place and shall be full compensation for furnishing and installing fiber-reinforced concrete sidewalks and wheel chair ramps, including field engineering and survey, layout, furnishing and compacting gravel base, forming, placing concrete, construction jointing, furnishing and installing expansion joints, curing, removal of all formwork, additional detail grading work for wheel chair ramps including



furnishing and installing ADA-compliant tactile warning strip, concrete finishing, protection of walks and ramps from weather, pedestrians and vandals, preparation for the installation of sign posts, and all incidentals necessary for the satisfactory completion of the work.

**3.28 BRICK & UNIT PAVER SIDEWALK & DRIVEWAY REMOVE & RESET (ITEM 35)**

- A. Measurement: Per square yard complete in-place, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per square yard complete in-place and shall be full compensation for removal and temporary stockpiling of existing brick or unit paver for reuse, furnishing and installing new brick or unit paver to match existing, layout, furnishing and compacting gravel base, setting brick or unit paver, mortar or filling joints to match existing, expansion joints, protection of sidewalk or driveway from weather, pedestrians or vandals, preparation for the installation of sign posts, and all incidentals necessary for the satisfactory completion of the work.

**3.29 LOAM AND SEED (ITEM 36)**

- A. Measurement: Per square yard of loam and seed for restoring growth to all previously grassed areas within the limits of work that were disturbed during construction to the limits and depth as shown on the Drawings, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per square yard and shall be full compensation for furnishing loam and seed, grading, compacting, seeding, fertilizing, and maintenance of seeded areas through the warranty period, and all incidentals necessary for the satisfactory completion of the work.

**3.30 NPDES STORMWATER POLLUTION PREVENTION (ITEM 37)**

- A. Measurement: Per percent complete of the lump sum item, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per percent complete of the lump sum item and shall be full compensation for furnishing, installing, and maintaining haybales, silt fabric, and other erosion control devices, removing and disposing siltation material, removal of erosion control upon completion of the work, as directed by the Engineer, and in accordance with the NPDES Construction Activities Permit, and all incidentals necessary for the satisfactory completion of the work.
- C. Work included:
  - 1. Full compliance with the NPDES Construction Activities permit, including but not limited to, filing for a NPDES e-NOI permit, preparation of a Stormwater Pollution Prevention Plan (SWPPP), site inspections, inspection reports, and filing of a Notice of Project Termination of said Permit.
  - 2. Payment of all penalty fees imposed by EPA if the Project is not in compliance with the NPDES Permit.

**3.31 MAPLE – RED 2.5-3.5 INCH CALIPER (ITEM 38)**

- A. Measurement: Per each, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each and shall be full compensation for excavation, furnishing, planting, installing, and maintenance of tree, planting soil and admixtures, preparing

subsoil, fertilizer, mulching, and watering, and all incidentals necessary for the satisfactory completion of the work.

- C. Work included:
1. Maintenance of growth, regarding, additional topsoil, fertilizer, mulching until growth is established and accepted by the City.
  2. In the event the plantings are not acceptable to the City, Contractor shall be responsible for furnishing and replacing plantings through the warranty period.

**3.32 ALUMUMINUM SIGN PANEL (ITEM 39)**

- A. Measurement: Per square foot of panel installed to sign post, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per square foot of panel installed to sign post and shall be full compensation for furnishing and installing sign panel and all hardware, brackets, and bolts for the installation of sign panel to steel sign post, and all incidentals necessary for the satisfactory completion of the work.
- C. Payment for street sign support posts shall be paid for separately under Item for Steel Sign Post.

**3.33 STEEL SIGN POST (ITEM 40)**

- A. Measurement: Per each installed, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each installed and shall be full compensation for furnishing and installing sign post, excavation, backfilling and compaction of foundations, and all incidentals necessary for the satisfactory completion of the work.

**3.34 SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS (ITEM 41)**

- A. Measurement: Per percent complete of the lump sum item, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per percent complete of the lump sum and shall be full compensation for furnishing, installing, and maintaining traffic cones, barrels, signs, and other safety control devices for the duration of the Project, and all incidentals necessary for the satisfactory completion of the work.

**3.35 CROSS WALKS AND STOP LINES REFLECTORIZED WHITE (THERMOPLASTIC) (ITEM 42)**

- A. Measurement: Per square foot of reflectORIZED thermoplastic lines of the width and length as indicated on the Drawings, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per square foot and shall be full compensation for furnishing and installing thermoplastic lines, preparing pavement surface, protecting thermoplastic while drying, and all other incidentals necessary for the satisfactory completion of the work.

**3.36 STREET NAME SIGN (ITEM 43)**

- A. Measurement: Per each, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each and shall be full compensation for installing the street sign onto a new steel sign post, furnishing all hardware, brackets, and bolts for the installation, and all other incidentals necessary for the satisfactory completion of the work.
- C. The signs will be furnished by the City which shall include the sign panel only. Furnishing of hardware by the Contractor shall be included under this item.
- D. Payment for street sign support posts shall be paid for separately under Item for Steel Sign Post.

**3.37 SIGN REMOVED AND STACKED (ITEM 44)**

- A. Measurement: Per each sign removed, transported, and stacked, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per each sign removed, transported, and stacked and shall be full compensation for the removal of sign and sign post, transporting, and stacking, and all incidentals necessary for the satisfactory completion of the work.
- C. Signs and posts shall be delivered and stacked to the City's Fulton Pit located at the end of Fulton Street in Newburyport.

**3.38 POLICE DETAILS (ITEM 45)**

- A. Measurement: Per hour worked by a uniformed traffic officer associated with the construction of the project as ordered by the Police Chief and approved by the Engineer.  
  
Measurement of hours worked in excess of eight (8) hours per day will be at one and one half (1.5) times the number of hours worked in excess of eight (8) hours that day.
- B. Payment: At the Contract Unit Price per hour worked. The Contractor shall submit receipts from the Police Department showing officer's name, hours worked, and location of assignment with all claims for compensation under this item.
- C. Work under this item shall consist of the furnishing of Police Details at project locations as directed by the DPS Director. The decision to use a police detail at a specific project location shall be based upon the City's review of the Contractor's traffic plan for the location. It is the City's responsibility to cancel a Police Detail in a timely fashion. The City will not reimburse the Contractor for a Police Detail when the cancellation notice is not given in a timely fashion. Lateness or failure to show on the part of the Contractor or inclement weather shall not excuse the Contractor from the obligation to give adequate notice to the Police Department. Payment for Police Details not cancelled as required will be the responsibility of the Contractor.

**3.39 TEST PIT FOR EXPLORATION (ITEM 46)**

- A. Measurement: Per cubic yard, as directed by the Engineer, and accepted by the City.
- B. Payment: At the Contract Unit Price per cubic yard and shall be full compensation for excavation, removal and disposal of roadway or sidewalk pavement, backfill using excavated material, and all incidentals necessary for the satisfactory completion of the work.

**END OF SECTION**

## SECTION 02100

### SITE PREPARATION AND SELECTIVE DEMOLITION

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. Provide all labor, equipment, materials and perform all operations necessary to complete the work of this Section as indicated within the Drawings and specified herein which shall include but is not limited to the following:
1. Protection of existing site conditions to remain.
  2. Removal of trees and other vegetation.
  3. Clearing and grubbing of vegetation, refuse, trash, and debris within the indicated limits.
  4. Removal of pavements and other hardscapes.
  5. Removal and/or resetting of existing site features.
  6. Demolition of miscellaneous structures, retaining walls, building foundations, steps, signage, fencing, and other appurtenances that interfere with construction.
  7. Abandonment and/or removal of utilities.
  8. Erosion and dust control.

##### 1.02 CODES AND STANDARDS

- A. Perform demolition and clearing work in accordance with applicable rules, regulations, codes and ordinances of Local, State and Federal Authorities, and in accordance with the requirements of the City of Newburyport and the public utility corporations having jurisdiction over the work.

##### 1.03 DEFINITIONS

- A. Remove (or Remove and Dispose): Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Reset: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

##### 1.04 FEES AND PERMITS

- A. Obtain and pay for all necessary permits, licenses and certificates and give all notices as required during the performance of the demolition work.

##### 1.05 PROJECT CONDITIONS

- A. Examination of Conditions: The Contractor shall be solely responsible for judging the full extent of work requirements involved, including but not limited to the potential need for storing materials temporarily and/or rehandling items prior to final installation.

- B. Traffic: Conduct site preparation and demolition operations to ensure minimum interference with roads and other active facilities. Do not close or obstruct roads or active facilities without permission from authorities having jurisdiction.

#### **1.06 EXISTING SERVICES**

- A. Locations of existing utilities shown on the plan have been developed from existing utility records and/or above ground inspection of the site. Completeness or accuracy of locations or depth of underground utility or structures cannot be guaranteed. Contractor must verify the location and depth of all underground utilities or structures prior to the start of work.
  - 1. Call Dig-Safe at 1-888-344-7233 seventy-two (72) hours prior to to excavation and construction. Record locations on Project Record Documents from Dig-Safe field location markings.
- B. Notify affected utility companies in advance and obtain written approval prior to commencing this Work. Coordinate and pay all applicable fees for disconnecting, removing, capping, and plugging utility services.
- C. The Contractor shall be responsible for the location, sealing, disconnection and/or protection of all existing utilities such as water, sewers, drains, electricity and telephone in accordance with the regulations of the utility concerned.
- D. Place markers to indicate location of disconnected services. Identify service lines and capping locations on Project Record Documents.

#### **1.07 MATERIALS OWNERSHIP**

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain on the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site and disposed of in a legal manner. Trees to be removed shall remain Owner's property unless otherwise determined by the Owner; at which time shall become the Contractor's property.
- B. Historical items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to the Owner, which may be encountered during site preparation, remain the Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the Owner.

#### **1.08 WARRANTY**

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

#### **1.09 STANDARDS**

- A. Except as modified by governing codes and by the Contract Documents, comply with applicable provisions and recommendations of the following:
  - 1. Standard Specification: Commonwealth of Massachusetts, Department of Public Works, Standard Specifications for Highways and Bridges, latest edition.
  - 2. AASHTO: American Association of State Highway and Transportation Officials, latest edition.
  - 3. ASTM: American Society of Testing and Materials, latest edition.
  - 4. ADA: Americans with Disabilities Act, latest edition.
  - 5. AAB: Architectural Access Board, Commonwealth of Massachusetts Regulation 521 CMR.

## **PART 2 - PRODUCTS**

### **2.01 REPAIR MATERIALS**

- A. Use repair materials identical to existing materials:
  - 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 2. Use materials whose installed performance equals or surpasses that of existing materials.

### **2.02 DUST CONTROL**

- A. Acceptable materials and equipment for dust control use shall consist of the following or equivalent thereof:
  - 1. Twenty (20) mil thick plastic/PVC tarps.
  - 2. Potable water.
  - 3. Motorized street sweeper.
  - 4. Calcium chloride
    - a. Calcium chloride shall conform to the requirements of AASHTO-M 144, Type I or Type II and Specification for Calcium Chloride, ASTM D98. The calcium chloride shall be packaged in moisture proof bags or in airtight drums with the manufacturer, name of product, net weight, and percentage of calcium chloride guaranteed by the manufacturer legibly marked on each container.
    - b. Calcium chloride failing to meet the requirements of the aforementioned specifications or which has become caked or sticky in shipment may be rejected by the City Engineer.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Before commencing site preparation and demolition work, the Contractor shall meet jointly with the City Engineer in order to discuss the procedures to be utilized. Contractor shall be held responsible for any damage to all vegetation designated to remain. The City Engineer will be sole judge as to damage inflicted.
  - 1. The City Engineer shall make the final determination of action required regarding any and all items indicated for removals, stockpiling, disposal, adjustment and protection.
- B. The Contractor shall give the City Engineer and Owner adequate advance notice of his readiness to start site preparation and demolition work in order that the City Engineer and Owner can review the Contractor's plans for parking and access to the construction site.
- C. The work shall be conducted with prime consideration given to the following:
  - 1. Compliance with governing laws and building codes.
  - 2. Safety, protection, and convenience of the public and workmen
  - 3. Minimization of dirt and dust proliferation.
  - 4. Neat and accurate cutting and trimming of elements to be partially removed, subject to the City Engineer's approval.
  - 5. Avoidance of any damage to existing vegetation to remain.

### **3.02 EXAMINATION**

- A. Observe existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- B. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to City Engineer.

### **3.03 UTILITIES**

- A. Notify all corporations, companies, individuals or local authorities owning, or having jurisdiction over, utilities running to, through or across areas to be affected by demolition operations.
- B. Locate and identify existing utilities that are to remain and protect them from damage.
- C. Have all discontinued utility services disconnected in accordance with the requirements of the utility owner.

### **3.04 PROTECTION OF EXISTING CONDITIONS**

- A. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place. In the event of damage, immediately make all repairs and replacements necessary to the approval of the City Engineer at no additional cost to the City.
  - 1. Protect improvements on adjoining properties and on Owner's property.
- B. Replace damaged shrubs and other vegetation designated to remain with the same size and species.
- C. The Contractor shall be liable for all damage and/or disturbance to existing trees and shrubs not otherwise designated for clearing and removal. When the Contractor's operations damage trees and/or other vegetation to remain, comparable replacement shall be performed as approved by the City Engineer at full replacement cost to the Contractor.

### **3.05 DEMOLITION REQUIREMENTS**

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  - 4. Maintain adequate ventilation when using cutting torches.
  - 5. Dispose of demolished items and materials promptly.

6. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- B. Conduct demolition operations in accordance with the accepted demolition plan and in a manner that will prevent damage to adjacent structures, utilities, pavements and other facilities to remain.
- C. Cease operations immediately if any damage, settlement or other adverse effect on adjacent structures occurs. Immediately notify the City Engineer and regulatory authorities. Do not resume operations until conditions are corrected, damage repaired and approval has been received from the City Engineer.
- D. Provide hoses and water connections. Spray water on demolition debris to minimize dust.
- E. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work.
- F. Locate demolition equipment and remove materials in a manner that prevents excessive loading to supporting walls, floors, or framing.
- G. All hazardous waste removal shall be performed by a hazardous waste Contractor qualified and duly licensed by the Commonwealth of Massachusetts to remove, transport and dispose of each type of hazardous substance.
- H. Removed and Reinstalled Items: Comply with the following:
  1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
  2. Pack or crate items after cleaning and repairing. Identify contents of containers.
  3. Protect items from damage during transport and storage.
  4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- I. Existing Items to Remain: Protect existing items indicated to remain against damage and soiling during selective demolition. When permitted by City Engineer, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.
- J. Concrete: Demolish in small sections. Cut concrete to a depth of at least  $\frac{3}{4}$ -inch (19 mm) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

### **3.06 DUST CONTROL**

- A. Maintain dust control at all times throughout the construction period. Control measures will be required in all areas as well as for stockpiles, temporary traffic ways, and all other areas where dust may develop.
- B. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent air-borne dust from dispersing into the atmosphere. These provisions do not supersede any specific requirements for methods of construction or applicable Conditions of the Contract with regard to performance obligations of the General Contractor.



- C. Dust control procedures shall be monitored by the Clerk of the Works and shall be subject to on-site review by authorities having jurisdiction.
- D. Earthwork may be halted as deemed necessary should dust control procedures prove inadequate.
- E. Stockpiles - Cover stockpiles in their entirety at the end of each day with a PVC, polypropylene or mylar covering. Securely anchor covering to prevent its removal and tearing during heavy winds. Maintain coverings and replace as necessary to assure constant covering and protection of all stockpiled materials. Stockpiles to remain undisturbed for longer than 2-weeks may be temporarily seeded to provide erosion control.
- F. Construction Vehicles - Clean all soil and debris from wheels of all construction vehicles and cover earth loads prior to leaving the construction site. The Contractor shall use the construction entrance/exit shown on the plans.
- G. Ramps and Public Streets - All temporary ramps and streets shall be swept daily or as required to prevent dust being a public nuisance.
- H. Calcium chloride shall be applied when ordered by the City Engineer and only in areas that will not be adversely affected by the application.
  - 1. Calcium chloride shall be uniformly applied at the rate of 1 1/2 pounds per square yard or at any other rate as directed by the City Engineer. Application shall be by means of a mechanical spreader, or other approved methods. The City Engineer shall determine the number and frequency of applications.

### **3.07 SITE CLEARING**

- A. General: Remove trees, shrubs, grass, and other vegetation, improvements, or obstructions, as indicated within the Drawings and as required to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. Removal includes digging out and off-site disposal of stumps and roots.

### **3.08 CLEARING AND GRUBBING**

- A. The Contractor shall accept the site as he finds it and shall remove and legally dispose off site all plants designated for removal and all debris, organic matter, and objectionable material which is not suitable at no additional cost to the City.
- B. Trees, shrubs, and vines and all stumps to be removed under clearing and grubbing shall be as indicated on the Drawings and as directed by the City Engineer. No burning shall be allowed on site. Dispose of all material legally off site at no additional cost to the City.
- C. Clearing and Grubbing: Clear site of trees, shrubs, and other vegetation, except for those indicated to remain.
  - 1. Completely remove all stumps and roots to a depth not less than eighteen inches (18") below original ground level for shrubs and three feet (3') below original ground level for trees.
  - 2. Use only hand methods for grubbing inside drip line of trees indicated to remain.
  - 3. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
  - 4. Unless further excavation is required, fill depressions caused by clearing and grubbing operations with Ordinary Borrow material.
    - a. Place borrow material in horizontal layers not exceeding six (6) inches loose depth, and thoroughly compact each layer to a density equal to adjacent original ground.

**3.09 REMOVAL OF EXISTING PAVEMENT AND CURBS**

- A. All items to be removed, stockpiled or designated for reuse shall include, but are not limited to those items as indicated on the Drawings.
- B. Remove existing bituminous concrete pavement, concrete pavement, concrete slabs and all other pavements as indicated on the Drawings. All material shall be removed and disposed of legally off-site daily, at no additional cost to the City.
- C. All sawed edges of paving shall be protected from damage until new is placed against it. Existing pavement that is damaged, disturbed or settled, shall be cut back by the same method and replaced as directed by the City Engineer at no additional cost to the City.

**3.10 PATCHING AND REPAIRS**

- A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.

**3.11 DISPOSAL OF DEMOLISHED MATERIALS**

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Burning is not permitted.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

**3.12 GENERAL CLEAN-UP**

- A. Remove from site all trash, litter and debris and leave site in a neat and orderly condition on a daily basis and to the satisfaction and approval of the City Engineer.

END OF SECTION

## SECTION 02140

### DEWATERING AND DRAINAGE CONTROL

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. This Section specifies designing, furnishing, installing, maintaining, operating and removing temporary dewatering systems and the requirements for control of surface water within the site.
- B. The work includes:
  - 1. Control of surface water runoff to prevent flooding of excavations, trenches and adjacent properties, and the loosening and saturation of soils.
  - 2. Removal and disposal of subsurface water from excavations and trenches as required to lower and control water levels during construction.
  - 3. Provision of equipment and facilities to remove sediment and control the rates and volumes of disposal of surface and subsurface waters removed from the work areas.

##### 1.02 DEWATERING SYSTEM REQUIREMENTS

- A. The Contractor shall design the dewatering systems to:
  - 1. Effectively reduce the hydrostatic pressure and lower the groundwater levels to a minimum of two feet (2') below the bottom of excavations;
  - 2. Develop a substantially dry and stable subgrade for the proposed work;
  - 3. Prevent damage to adjacent properties, buildings, structures, utilities and other facilities;
  - 4. Ensure that, after twelve (12) hours of initial pumping, no soil particles will be present in the discharge.
- B. Locate dewatering facilities where they will not interfere with utilities and construction work to be done by others.
- C. Modify dewatering equipment and procedures when operations threaten to cause damage to new or existing facilities.
- D. Disposal of discharge waters shall be in accordance with all local, state, and federal regulations and as directed by the City Engineer.
- E. The Contractor shall be solely responsible for the proper design and execution of methods for controlling surface and groundwater. Design review and/or field monitoring activities by the City or City's representative shall not relieve the Contractor of his responsibilities for the work specified herein.

##### 1.03 SUBMITTALS

- A. Prior to installation of the dewatering system and at least two weeks prior to performing any excavation in areas that require dewatering, submit working drawings and design data for review by the City Engineer with the following information:
  - 1. The proposed types of dewatering system;
  - 2. Arrangement, location and depths of system components;
  - 3. Complete description of equipment and instrumentation to be used including installation, operation and maintenance procedures;

4. Types and sizes of filters;
  5. Design calculations demonstrating adequacy of the proposed system and equipment; and
  6. Provisions and methods of sediment removal and disposal.
  7. Provisions and methods of water removal and disposal.
- B. It is anticipated that the initial dewatering plan will have to be modified to suit the variable soil/water conditions encountered during construction. Modify the dewatering plan as often as necessary to meet the Specifications.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS AND EQUIPMENT**

- A. Furnish pumps, pipe, appliances, and equipment of capacity capable to keep the excavations free from water as necessary to complete the work as specified herein.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. The Contractor shall control surface water and ground water such that the excavation to final sub-grade is made in the dry, the bearing soils are maintained undisturbed, and softening and/or instability or disturbance due to the presence or seepage of water not occur. All construction and backfilling shall proceed in the dry and floatation of completed portions of work shall be prevented.

### **3.02 SURFACE WATER CONTROL**

- A. Intercept and divert surface water runoff away from excavations through the use of dikes, curb walls, ditches, pipes, sumps or other approved means.
- B. Provide and maintain ditches of adequate size to collect and prevent surface and subsurface water seepage from entering the excavations. Divert the water to settling basins or other approved equipment required to reduce the amount of fine particles before discharge into drainage pipes and natural watercourses. If a drainage system or watercourse becomes silted due to dewatering operation, the Contractor at no additional cost to the City shall clean it.

### **3.03 DEWATERING EXCAVATIONS**

- A. Accomplish dewatering in accordance with the means and methods submitted as required in Article 1.04 and approved by the City Engineer. Keep the City Engineer advised of any changes required to accommodate field conditions and, on completion of the dewatering system installation, revise and resubmit the information required to show the installed system.
- B. Perform dewatering operations to lower the groundwater level in excavations as required to provide a stable, dry sub-grade for the prosecution of the proposed work.
- C. Maintain dewatering operations in a manner that prevents buildup of excessive hydrostatic pressure and damage to structures, and the sub-grade.
- D. Do not allow water to accumulate in excavations. The Contractor shall provide and maintain at all times ample means and devices to remove promptly, and to dispose of properly, all water entering excavations and to keep them dry until the proposed work is completed.
- E. If the Contractor's method of dewatering does not properly dewater the excavation as specified, then the Contractor shall install groundwater observation wells, as directed by the

City Engineer, and implement a revised dewatering plan that lowers the groundwater a minimum of 6 inches below the bottom of final excavation elevation, at no additional cost to the City.

- F. No pipe shall be laid in water. No masonry shall be laid in water, and no water shall be allowed to rise over concrete and brick masonry within 24-hours after being placed. Water shall not be allowed to rise over any concrete and masonry for four days. The Contractor shall constantly guard against the possibility of flotation of pipe or structures after installation. Backfill or other means shall be placed promptly to prevent this occurrence.
- G. Dewatering units used in the work shall be surrounded by suitable filter media such that no fines shall be removed by pumping. Pumping shall be continuous until pipe or structure is adequately backfilled. Stand-by pumps shall be provided.
- H. Dewatering flows shall be disposed of in an area approved by the City Engineer. Sanitary sewer systems shall not be used to dispose of dewatering flows.

### **3.04 RECORDS FOR WELL SYSTEMS**

- A. When well point, or other type of well systems, are used for dewatering, the following information shall be obtained and recorded:
  - 1. The average flow rate and time of operation of each pump used in the dewatering system. Provide appropriate devices, such as flow meters, for observing the flow rates. Submit the data, in tabular form, during the period that the dewatering system is in operation.
  - 2. The groundwater elevations during the period that the dewatering system is in operation. Submit observation records daily within 24-hours of reading.
  - 3. During the initial period of the dewatering, make required observations on a daily basis. If, after a period, dewatering operations have stabilized, observations may be changed to longer intervals, as accepted by the City Engineer.

END OF SECTION

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## SECTION 02200

### EARTHWORK

#### PART 1 GENERAL

##### 1.01 DESCRIPTION

- A. Work to be done under this Section includes, but is not limited to, providing all labor, materials, equipment, and incidentals as necessary to the conduct and complete the Work specified herein and shown on the Drawings.
1. Excavate all materials, including soil, boulders, abandoned utilities, pavements, curbs, granite blocks, and all other materials as necessary to construct the site improvements shown on the Drawings.
  2. Excavate by methods that will permit observation of soils for the purpose of identifying, screening, testing, and segregating soils as necessary prior to on-site reuse. The excavated soil will be classified by the City according to the criteria contained herein and stockpiled for on-site reuse or off-site disposition. Soils to be segregated include but may not be limited to:
    - a. Unacceptable Soil Material
    - b. Topsoil
    - c. Contaminated Material
    - d. Solid Waste
    - e. Acceptable Soil Material
  3. The Contractor shall be responsible for handling, loading, stockpiling, on-site transport, on-site storage, and legal off-site disposal of excavated soils.
  4. Preserve and protect existing and new site improvements during the course of the Work.
  5. Preserve and protect adjacent structures that are to remain during the course of the Work.
  6. Prepare, grade, shape, compact and protect all subgrades, backfills, and ground surfaces as shown on the Drawings.
  7. Furnish materials, specified herein, from off-site approved source(s) as needed to complete the Work.
  8. All excavation, backfilling, filling and rough grading required for the construction of pavements and structures and compaction thereof.
  9. Excavation and backfilling for underground utilities and appurtenances.
  10. Furnish, install, and maintain sheeting and bracing, if necessary, to protect excavations against soil cave-in due to the earthwork performed under this Contract.
  11. Place and compact backfill materials required to construct the proposed site improvements as shown on the Drawings.
  12. Segregate, handle, stockpile, manage, and reuse suitable excavated materials. The Contractor shall mechanically screen on-site soils to remove debris as directed by the City prior to reuse. Only soils approved by the City shall be reused on-site.
  13. Off-site disposal of Contaminated Material, if required, shall not be conducted without approval of the Owner and the City.

14. Off-site disposal of Topsoil and Excess Acceptable Soil Material shall not be conducted without approval of the City.
15. The Contractor shall be solely responsible for impacts and damage to any existing structure due to his/her work, and for corrective action or repairs needed to restore the structure(s) to original condition at no additional cost to the City.

## 1.02 DEFINITIONS AND REFERENCES

- A. The following terms will be used throughout this Section. The definition given for the term will be understood to be the intent of the term used:
  1. Acceptable Soil Material: Existing in-situ soil fill or natural material including, but not limited to, sand, sandy gravel, gravel, or Ordinary Borrow-type material as defined by MHDSSHB, with trace amounts of silt, ash, cinders and fragments of concrete, and not as otherwise classified as Unacceptable Soil Material.
  2. Unacceptable Soil Material: Soil material which contains organic silt, peat, clay, vegetation, wood or roots, stones or rock fragments over 6-inches in diameter, porous biodegradable matter, loose or soft fill, construction debris, or refuse.
  3. Solid Waste: Material including building debris; brick, wood, concrete, etc., granite blocks, ash and cinders, cobbles and boulders shall be stockpiled separately from other materials and classified as Solid Waste. Solid Waste, which has been separated from the soil, will not be subject to analytical testing to determine disposition of the debris for off-site disposal.
  4. Contaminated Material: Soil material that is contaminated by a release of oil and/or hazardous material and for which notification is required by 310 CMR 40.0300 and not classified by 310 CMR 30.00 as a RCRA Hazardous Waste.
- B. Percent compaction is defined as the ratio of the field dry density, as determined by ASTM D-2922 to the maximum dry density, determined by ASTM D-1557, multiplied by 100.
- C. ASTM: Specifications of the American Society for Testing and Materials.
- D. Code: Eighth (or latest) Edition of Massachusetts State Building Code.
- E. USEPA: United States Environmental Protection Agency.
- F. OSHA: Occupational Health and Safety Administration.
- G. MCP: Massachusetts Contingency Plan.
- H. MHDSSHB: Massachusetts Highway Department Standard Specifications for Highways and Bridges, 1988 or latest edition.
- I. MHD or MDOT: Massachusetts Department of Transportation (MassDOT) Highway Division (formerly MassHighway Department).
- J. City: City Engineer, City's Field Rep or other authorized representative of the City.
- K. Zone of Influence: The zone beneath imaginary lines extending from points 2-feet laterally beyond footing outer edges and down on a 1H:1V slope.

## 1.03 EXCAVATION CLASSIFICATIONS

- A. Excavation: Excavation shall be unclassified and no consideration will be given to the nature of the materials. Excavation shall comprise and include the satisfactory removal and disposal of all materials encountered regardless of the nature of the materials and shall be understood to include, but not be limited to, soil, fill, foundations, pavements, curbs, boulders, piping, railroad track and ties, cobblestones, footings, bricks, concrete, previously abandoned



drainage and utility structures, and debris, and not as otherwise classified as Contaminated Material.

- B. Rock Excavation: Rock is defined for payment purposes as stone or hard shale in original ledge, boulders over two cubic yards (2yd<sup>3</sup>) in volume in open areas and one cubic yard (1yd<sup>3</sup>) in volume in trenches, and masonry or concrete that cannot be broken or removed by normal job equipment (power shovels, scoops, or D-8 bulldozers with ripper attachment) without the use of explosives or drills. The classification does not include materials that can be removed by means other than drilling and blasting or drilling and wedging but which, for reasons of economy in excavating, the Contractor prefers to remove by drilling and blasting. The word "trenches" shall mean excavation having vertical sides the depths of which exceed the width, made for drain, sewer, water, and gas pipes; electric and steam conduits; and the like.

#### 1.04 JOB CONDITIONS

- A. Prior to submitting his bid, the Contractor shall review and understand the information provided. The subsurface information is made available to the Contractor for information on factual data only and shall not be interpreted as a warranty of subsurface conditions whether interpreted from written text, boring logs or other data.

#### 1.05 QUALITY CONTROL

- A. The City may retain and pay for the services of a Geotechnical Consultant to perform on-site observation and testing during construction operations. The scope of services will be determined by the City and the Geotechnical Consultant. The City reserves the right to modify or waive Geotechnical Consultant services.
- B. The Geotechnical Consultant's presence does not include supervision or direction of the actual work by the Contractor, his employees or agents. Neither the presence of the Geotechnical Consultant, nor any observations and/or testing performed by him, nor any notice or failure to give notice shall excuse the Contractor from defects discovered in his work.
- C. The Contractor shall adhere to the applicable requirements of the Standard Specifications, OSHA Standards and to all other applicable ordinances, codes, statutory rules, and regulations of federal, state, and local authorities having jurisdiction over the Work of this Section.
- D. The Contractor may conduct additional field and laboratory testing or screening tests for his/her own information at no additional cost to the City.
- E. Work not in conformance with the specified requirements shall be improved, or removed and replaced, at no additional cost to the City. All costs related to testing of nonconforming Work or materials shall be paid for by the Contractor, at no additional cost to the City.
- F. Tolerances:
1. Construct finished soil and backfill surfaces to the grades and elevations indicated on the Drawings.
  2. Maintain the moisture content of fill material as it is being placed within plus or minus two percent of the optimum moisture content of the material as determined by the laboratory tests specified herein.

#### 1.06 SUBMITTALS

- A. The City will be responsible for the approval or rejection of the suitability of all materials.
- B. Submit the name of each material supplier and specific type and source of each material. Submit necessary testing results to document that materials meet the requirements of the specific use for which it is intended. Any change in source throughout the job requires approval of the City.

- C. For use of fabrics or geogrids, submit manufacturer's literature for approval by the City.

**1.07 EXISTING UTILITIES**

- A. Provide protection as necessary to prevent damage to existing utilities to remain. Refer to the Drawings to determine which utilities are to be removed, replaced, or relocated as part of the Work.
- B. Prior to beginning any excavation or fill placement, accurately locate and mark underground utilities and appurtenances in the site area.
- C. Should an uncharted, or incorrectly charted utility be encountered during excavation, consult utility owner immediately for directions. Cooperate with City and public and private utility companies in keeping respective facilities and services in operation. Repair damaged utilities to the satisfaction of utility company.
- D. In case of any damage or injury caused in the performance of work the Contractor shall, at his own expense make good such damage or injury to the satisfaction of, and without cost to, the City.
- E. Existing utilities to remain that are damaged during the project work shall be repaired or replaced to their condition prior to commencement of earthwork operations. Inactive or abandoned utilities encountered during construction operations shall be removed to the extent directed by the Owner. The location of any such utilities allowed to remain by the Owner shall be noted on the Record Drawings.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. All materials to be imported to the site shall not contain detectable amounts of oil and/or hazardous materials as defined by the Massachusetts Contingency Plan (CMR 40.0000).
- B. Granular Fill: Granular Fill shall consist of clean, aggregate sand and gravel mineral soil free of organic material, loam, trash, snow, ice, frozen soil or other deleterious material well graded within the following limits:

Sieve Size (ASTM D422)	Percent Passing by Weight
3 in	100
No. 4	30 – 90
No. 40	10 – 50
No. 200	0 – 5

Granular Fill shall be used below structural slabs, sidewalks, exterior slabs, and at other locations shown on the Drawings.

On-site fill soils meeting the requirements for Acceptable Soil Material defined in Paragraph 1.02 of this section may be used as Granular Fill except within the zone of influence of footings. The Contractor shall mechanically screen on-site soils to remove debris prior to reuse as directed by the City. Only those soils approved by the City shall be reused on-site.

- C. Ordinary Fill: Ordinary Fill shall consist of Acceptable Soil Material and shall be of well-graded, natural, mineral soil free from organic materials, loam, wood, snow, ice, frozen soil cinders, asphalt, brick, concrete, trash, debris and other weak, compressible, or deleterious materials. The material shall not contain materials subject to decay, decomposition, or dissolution.

Ordinary Fill shall not contain particles larger than four (4) inches in maximum dimension and shall have a maximum of 80 percent passing the No. 40 sieve and a maximum of 20 percent

passing the No. 200 sieve. It shall have physical properties such that it can be readily spread and compacted to the specified densities in a reasonable length of time.

On-site fill soils meeting the requirements for Acceptable Soil Material defined in Paragraph 1.02 of this section may be used as Ordinary Fill. The Contractor shall mechanically screen on-site soils to remove debris prior to reuse as directed by the City. Only those soils approved by the City shall be reused on-site.

- D. 3/4-inch Crushed Stone: Crushed Stone shall conform to the requirements of item M2.01.4 of the MHDSSHB. Crushed Stone shall be used as indicated on the Drawings. Crushed Stone shall be washed to remove fine-grained soils prior to use on the project.
- E. Flowable Fill: Flowable Fill shall consist of a commercial mixture of flyash and cement with a minimum 28-day compressive strength of 200 psi.
- F. Gravel Borrow: Gravel Borrow shall be as specified in Section M1.03.0 Type c of the MHDSSHB.
- G. Sand Borrow shall be as specified in Section M1.04.0 Type b of the MHDSSHB and shall consist of clean, inert, hard, durable grains of quartz or other hard durable rock, free from clay or loam, surfacing coatings, and deleterious materials.
- H. Topsoil: Shall comply with MHDSSHB Section M1.07.0.
- I. Rip-Rap shall conform to MHDSSHB Section M2.02.3.
- J. Sand shall conform to ASTM C33 for fine aggregate.

### **PART 3 EXECUTION**

#### **3.01 GENERAL EXCAVATION REQUIREMENTS**

- A. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Material, if stockpiled, shall be stored so as not to interfere with the established sequence of the construction. If there is not sufficient area available to stockpile Acceptable Soil Material and Topsoil within the limits of the project, the Contractor is responsible for providing off-site staging or stockpile areas.
- C. Excavation Limitations:
  - 1. Stability of excavations and job safety are the sole responsibility of the Contractor. Limit the excavation open at any one time as to reduce conditions dangerous to personnel, equipment and existing site improvements, all according to site conditions. The Contractor's operations shall be in strict compliance with OSHA Regulations.
  - 2. Excavate only to width and depth indicated to provide clearance for utility structures or foundations.
  - 3. Excavate by use of hand tools when within 2-feet of existing pipes, conduits, or other structures.
  - 4. Perform open cut excavation so as not to endanger personal safety. Do not undermine existing structures or utilities.
- D. Over-Excavation:
  - 1. When any excavation is extended beyond the limits indicated without written consent of the City, backfill and compact the additional excavated area with material indicated to be under

the pipe, conduit, or other structure, which was being excavated. This over-excavation and placement of material will be at no additional cost to the City.

E. Dewatering:

1. Perform dewatering operations in accordance with Section 02140 in order to maintain excavated subgrades in a dry condition.
2. All excavation and backfilling shall be performed in-the-dry.

F. Support of Excavation and Underpinning:

1. Provide excavation support and underpinning systems to perform the following:
  - a. Provide safe personnel access and working conditions within the excavation itself.
  - b. Limit the extent of excavation to prevent damage to adjacent structures and utilities.
  - c. Coordinate the extent of excavation to prevent disruption of other trades or disrupt the progress of others.

G. Unacceptable Subgrade:

1. Remove soft or loose material if encountered at the subgrade. After removal, backfill with flowable fill, compacted granular fill, or Acceptable Material meeting density requirements of materials indicated to be placed on the subgrade.
2. Subgrade soil subject to disturbance from exposure or working conditions shall be excavated and replaced with flowable fill, compacted granular fill, or Acceptable Material meeting the requirements of materials indicated to be placed on the subgrade.

- H. Topsoil. Strip topsoil and stockpile as required at the jobsite at locations approved by the City . Prevent topsoil from contamination by other materials, and provide adequate drainage and erosion protection. Clear, grub, and rough-grade storage areas as appropriate remove organic material or accumulated debris.

**3.02 DUST CONTROL**

- A. Maintain dust control at all times throughout the construction period. Control measures will be required in all areas as well as for stockpiles, temporary traffic ways, and all other areas where dust may develop.
- B. Dust control procedures shall be monitored by the City and shall be subject to on-site review.
- C. Earthwork may be halted as deemed necessary should dust control procedures prove inadequate.

**3.03 STORAGE OF SOIL MATERIALS**

- A. Stockpile Acceptable Soil Material, Topsoil and Contaminated Material (if encountered) without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent erosion and install sediment controls. Stockpile soil materials a minimum of 10-feet from edge of excavations or as otherwise required by Federal, State, or local regulations.

**3.04 PROTECTION OF EXISTING UTILITIES**

- A. Restore or replace damaged utilities at no additional cost to the City to the original condition before the Work was begun.
  1. Protect from damage, at no additional cost to the City, existing pipes, poles, wires, fences, property line markers, structures and site improvements which the Owner decides are to remain.
  2. Restore existing property or structure as soon as directed by the Owner.

B. Protection of Existing Utilities:

1. Provide temporary support for permanent utilities encountered during excavation such that the load is gradually transferred from the soil to the supports.

**3.05 EXCAVATION**

A. General:

1. Excavate by machine, conforming to requirements in the following paragraphs, to the indicated foundation preparation subgrade.
2. Proof-compact any exposed subgrade soils prior to placement of subgrade preparation material.

B. Depth of Trench: Excavate trench to permit subgrades to be laid or constructed at elevations, slopes, and depths of cover indicated.

C. Width of Trench: Excavate trenches to the dimensions shown on the Drawings. Do not widen trenches by scraping or loosening materials from the sides of the excavation. Maintain sides of trenches firm and undisturbed until backfilling and compaction has been completed.

D. Bottom of Trench: Excavate trenches to the subgrade levels, allowing for placement of granular fill, or crushed stone.

**3.06 SUBGRADE PREPARATION**

A. Unsuitable material, such as construction debris, organic matter, or other deleterious materials, shall be removed when exposed at soil subgrade level (beneath retaining/wingwall footings, building footings, tunnel slabs or paved roadway areas) and replaced with compacted granular fill, crushed stone or flowable fill.

B. Care shall be taken to avoid disturbance to subgrades.

C. Provide a firm, smooth, stable, undisturbed subgrade as judged by the City . Subgrades shall be prepared in-the-dry.

D. Movement of construction equipment directly over exposed subgrades shall not be permitted.

E. Subgrades beneath pavements shall be compacted with a minimum of two (2) passes in each of two perpendicular directions of a self-propelled vibratory roller imparting a minimum of 30,000-pounds dynamic force.

F. Place the subgrade preparation material within one day of excavation or sooner to prevent disturbance to the subgrade.

**3.07 ROCK EXCAVATION**

A. Cross Sectioning: When rock is encountered during excavation, it shall be uncovered and exposed, and the City shall be notified in writing by the Contractor before removal work proceeds. The areas in question shall then be measured, and payment shall be determined. Excavation of material in question before agreement by the City as to the character of the material, or failure to notify the City or to take measurements will forfeit the Contractor's right to payment for rock excavation. The quantity of rock to be removed shall be based on the limits established below. Measurements shall be made by a Registered Surveyor, paid for by the Contractor, and approved by the City.

B. Blasting will not be allowed.

C. Measurement: Excavation of rock, as defined in paragraph 1.03B, if ordered in writing by the City, measured in place within the Contract limits as defined on the Plans or in any duly authorized modifications thereto. Measurement for rock excavation will be made for:

1. Pipe trenches to a depth of six inches (6") below the bottom of the bell and for a width equal to the inside diameter of the pipe, plus twelve inches (12") beyond the inside diameter on each side, provided that overlapping computed volumes of any ledge or boulder excavation shall be paid for only once.
2. Paved areas to the underside of the respective subbase for such areas.
3. Lawns and planting areas to a depth of twenty-four (24") below finished grade.
4. Any foreseen rock or boulder encountered, which must be removed for construction of the work defined on the plans or in modification thereto, shall be measured in its original position to the limits of clearly defined vertical construction lines and to the depth required for the defined construction; payment will be at the unit prices stated above.

### **3.08 BACKFILL AND COMPACTION**

#### **A. Fill Placement:**

1. Place and compact fill to the limits specified herein, and shown on the Drawings in order to complete the Work. Unless other material is indicated on the Drawings, place Acceptable Soil Material as backfill for trenches and around structures. If sufficient Acceptable Soil Material is not available from the excavations, provide approved off-site granular fill material at no additional cost to the City.
2. Do not place frozen fill. Do not place fill, susceptible to freezing, in temperatures less than 32 degrees Fahrenheit. Do not place fill on frozen ground.
3. Slope fill surfaces at the end of each day to provide for free surface drainage.
4. Placement of fill shall not begin prior to observation and approval of subgrade conditions by the City. The Contractor shall not place any fill material in the absence of the City.
5. If excessive weaving or instability, as judged by the City, during compaction is observed, compaction efforts shall be discontinued until the Contractor stabilizes the subgrade. If required, the Contractor shall excavate and replace the unstable fill material with acceptable compacted material at no additional cost to the City.
6. Dewater all subgrades prior to filling as required to prevent disturbance. Place all fill in-the-dry.
7. Compaction by puddling or jetting is prohibited.
8. Control groundwater and surface run-off to minimize disturbance of material being placed.
9. Whenever placing fill, provide suitable transition layers or non-woven filter fabric as required to prevent the migration of fine material into void spaces of coarser material.
10. Where fill material meets previously existing grades, provide a smooth transition to meet existing grades.
11. Protect structures and pipes from damage during backfilling operations.
12. Protect existing and new site improvements during construction operations. Repair damage at no additional cost to the City.
13. Backfill and compact indicated material under, around, and above tunnel structures to the indicated compaction density requirement. Utilize compaction devices such as: pogo, jack-hammer, or hand tampers, which will not damage the tunnel structure within the trench.
14. Do not drop Backfill material into trench from a height of more than 5-feet., or in a manner which will damage the structure within trench.

15. To a reasonable degree, backfill on-site material at approximate elevations from which it was excavated.
  16. Place material evenly around structure to maintain equal soil pressure on all sides of structures.
  17. Backfill beneath sidewalks and pavements as indicated on the Drawings.
- B. Lift Thickness of Material:
1. Place fill in uniform horizontal layers.
  2. Granular Fill: Place in layers not to exceed 9-inches in thickness prior to compaction when utilizing heavy self-propelled vibratory compaction equipment, and 6-inches when utilizing hand-operated compaction equipment. In general, compact material with a minimum of four complete coverages per lift.
  3. Ordinary Fill: Place in layers not to exceed 12-inches prior to compaction in thickness when utilizing heavy self-propelled vibratory compaction equipment, and 6-inches when utilizing hand-operated compaction equipment. Compact material with a minimum of four complete coverages per lift.
  4. Crushed Stone: Place in layers not to exceed 12-inches in thickness prior to compaction when utilizing heavy self-propelled compaction equipment, and 6-inches when utilizing hand-operated compacted equipment. Compact with a minimum of four coverages per lift.
- C. Compaction Requirements: The degree of compaction is expressed as the in-place fill dry unit weight as a percentage of the maximum dry density at optimum moisture content as determined by ASTM Test D1557, Method C. The minimum compaction requirements are as follows:

<u>Area</u>	<u>Minimum Degree of Compaction (ASTM D1557)</u>
Landscape and Lawn areas	90%
Below soil-supported slabs, foundations, and other structures	95%
Pavement Gravel Base	95%
Trench Backfill	95%
Adjacent to Building Foundation Walls and Manhole Structures	95%
Within 3 ft directly below sidewalks, pavements, and exterior concrete slabs	95%

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END OF SECTION



## SECTION 02270

### EROSION AND SEDIMENTATION CONTROL

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. This Section specifies requirements for temporary erosion and sedimentation control provisions.
- B. The work includes:
  - 1. Providing all temporary erosion control measures shown on the Drawings and required by the City during the life of the Contract to control soil erosion and water pollution.
  - 2. The installation and maintenance of sediment controls, berms, ditches, sedimentation basins, construction exits, fiber mats, catch basin filters, straw, netting, gravel, trenches, mulches, grasses, slope drains and other approved erosion control devices or methods.

##### 1.02 LAWS AND REGULATIONS

- A. The Contractor shall apply for and comply with National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP).

##### 1.03 SUBMITTALS

- A. At least seven (7) days prior to performing any earthwork activity, the Contractor shall submit an e-NOI Permit Application to the EPA to obtain coverage under the NPDES CGP. A copy of the e-NOI permit application shall be given to the Engineer.
- B. At least seven (7) days prior to the start of construction, a copy of the Stormwater Pollution Prevention Plan (SWPPP) shall be submitted to the Engineer for review and approval. The requirements of the SWPPP content are provided on the NPDES CGP website.
- C. Prior to the start of the construction, the Contractor shall submit to the City for acceptance, schedules for the construction of temporary and permanent erosion and sediment control work, clearing and grubbing, grading, construction, and paving. No work shall be started until control schedules and methods of operations have been accepted by the City.

##### 1.04 REFERENCES

- A. Massachusetts Highway Department, Standard Specification for Highways and Bridges, latest edition, hereinafter referred to as MHDSSHB.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Erosion Seed for quick growing grasses, such as wheat, rye or oats, shall be in accordance with MHDSSHB Section M6.03.1 Erosion Seed.

#### PART 3 - EXECUTION

##### 3.01 GENERAL

- A. All earthwork activities shall be in strict compliance with the NPDES CGP and local regulations. Failure to comply with said Permit may result in fines by the EPA and all fines shall be borne by the Contractor at no additional cost to the City. If a conflict exists between the Project

- specifications provided herein and the CGP, the Contractor shall inform the Engineer as soon as possible for resolution. In general, the CGP shall govern.
- B. A copy of the SWPPP shall be available on-site or at a location designated by the Engineer. The SWPPP may require updating in accordance with the CGP. Site inspections shall be performed on a regular basis in accordance with the NPDES CGP and a copy of the inspection shall be submitted to the Engineer for review.
  - C. All disturbed soils shall be stabilized, either permanently or temporarily, within two (2) weeks of disturbance.
  - D. At a minimum, the following shall apply:
    - 1. Sediment controls shall be provided at points where drainage from the work leaves the site to reduce the sediment content of the water. Sufficient controls shall be provided such that all flow will filter through the barriers. Other methods which reduce the sediment content to an equal or greater degree may be used as approved by the City.
    - 2. Drainage leaving the site shall flow to water courses in such a manner as to prevent erosion.
  - E. When it becomes necessary, the City will inform the Contractor of construction procedures and operations that jeopardize erosion control provisions. If these construction procedures and operations are not corrected promptly, the City may suspend the performance of any or all construction until corrections have been made, and such suspension shall not be the basis of any claim by the Contractor for additional compensation from the City nor for an extension of time to complete the Work.
  - F. The City has the authority to order immediate, additional, temporary control measures to prevent contamination of adjacent streams or other watercourses, or other areas of water impoundment and damage by erosion.
  - G. The Contractor shall construct all permanent erosion and sediment control features at the earliest practical time as outlined in the accepted schedule. Temporary erosion and sediment control measures shall be used to correct conditions that develop during construction which were unforeseen, but are needed prior to installation of permanent control features, or that are needed temporarily to control erosion or sedimentation which develops during construction operations.
  - H. Failure by the Contractor to control erosion, pollution, and siltation shall be cause for the City to employ outside assistance to provide the necessary corrective measures. The cost of such assistance, including engineering costs, will be charged to the Contractor and appropriate deductions made to the Contractor's monthly progress payment request.
  - I. The Contractor shall remove sediment from erosion control facilities as required, and as directed by the City. The Contractor shall modify and improve erosion control facilities and replace devices as required, and as directed by the City.
  - J. Temporary and permanent erosion and sedimentation control measures are shown on the Drawings. The Contractor shall strictly adhere to the provisions. Additionally, temporary measures shall be constructed to accommodate field conditions that develop during construction.
  - K. Temporary sedimentation basins shall be employed as required during construction. Sedimentation shall be periodically removed from the basins and from behind erosion and sedimentation control devices. The Contractor shall direct all possible site runoff to the temporary sedimentation basins.
  - L. The temporary sedimentation basins shall be maintained from the start of construction until construction of the permanent detention basins is completed and perimeter areas are

stabilized. A temporary outlet shall be constructed above the expected sediment levels. Construction of the basins shall be sequenced so that the temporary outlet is installed and basin embankment is constructed with the material available from the initial site excavations.

**3.02 MAINTENANCE AND CLEAN UP**

- A. The Contractor shall inspect the condition of diversion dikes and ditches, filter berms, interceptor dikes, sediment basins and other erosion and sedimentation control devices after each rainstorm and during major storm events. Repairs shall be made as necessary and as directed by the City.
- B. Accumulated sediment trapped by erosion and sedimentation control devices shall be removed as required, and as directed by the City.
- C. During construction, temporary outlets of the drainage systems shall direct the flow to temporary or permanent sedimentation basins.
- D. Temporary soil erosion and sedimentation control devices shall be removed and adjacent areas outside the limits of grading restored upon completion of the work or when directed by the City. Upon removal of the temporary controls, the site shall be restored to original condition.

END OF SECTION

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## SECTION 02400

### STORMWATER MANAGEMENT SYSTEM

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. This Section specifies requirements for the site stormwater management systems.

##### 1.02 SUBMITTALS

- A. Shop Drawings:
1. Materials list of items proposed for the work.
  2. Shop drawings or descriptive literature, or both, showing dimensions, joint and other details of all materials proposed for the work. Shop drawings shall be submitted to the City for approval prior to ordering material.
- B. As-Built Drawings:
1. Submit 1 hard copy and an electronic (AutoCAD drawing or PDF) of As-Built Drawings upon completion and acceptance of work.
  2. As-Built Drawings shall be complete and shall indicate the true measurements and locations, horizontal and vertical, of all new construction. As-Built Drawings shall include a minimum of three ties to each gate valve box from fixed permanent objects. As-Built Drawings shall also contain any additional information required by the municipality, and shall be stamped with the seal of a Licensed Land Surveyor and Licensed Professional Engineer.

#### PART 2 - PRODUCTS

##### 2.01 General:

- A. All materials for stormwater management system shall be new and unused.

##### 2.02 PIPE

- A. Reinforced Concrete Pipe:
1. Pipe shall comply with the requirements of ASTM C76. All pipe shall be Class III unless indicated otherwise on the Drawings. The minimum depth of cover for Class III pipe shall be 3-feet from finished grade to the top of pipe. In areas where conflicts of other reasons preclude meeting the minimum depth, a different class or material of pipe shall be used. Contractor shall submit this class or material to the City for review and approval.
  2. Joints for the reinforced concrete pipe shall be the tongue and groove or bell and spigot type with rubber gasket conforming to ASTM C443.
- B. Ductile iron pipe:
1. Pipe shall be designed in accordance with ANSI A21.50/AWWA C150 and manufactured in accordance with ANSI A21.51/AWWA C151. Fittings shall be either mechanical joint or push-on joint complying with ANSI/AWWA C110/A21.10 or ANSI/AWWA C111/A21.11.
  2. Ductile iron pipe shall be Pressure Class 52 furnished in 18-foot or 20-foot nominal lengths.
  3. Pipes shall be cement-mortar lined in accordance with ANSI A21.4/AWWA C104, except that the cement lining shall be double thickness.

4. The exterior of all pipes shall be factory coated, with a double coat of asphaltic material conforming to ANSI A21.51/AWWA C151. The interior of all pipes shall have a seal coat of asphaltic material applied over the cement lining in accordance with ANSI A21.4/AWWA C104.

C. Smooth Interior Corrugated Polyethylene Pipe:

1. The product supplied under this specification shall be high density polyethylene perforated (HOPE) and solid corrugated exterior/smooth interior pipe. Four through 10-inch diameters shall meet all the requirements of AASHTO M252 with the addition that the pipe have a smooth interior liner. Twelve to 36-inch diameters shall meet all other requirements of AASHTO M294 Type S. Forty-two and 48-inch diameters shall have a have minimum pipe stiffness of 20 and 17 psi, respectively, at 5% deflection, and shall meet all other requirements of AASHTO M294.
2. Material shall meet ASTM 01248 Type III, Category 4, Grade P33, Class C; or ASTM 03350 Cell Classification 324420C.
3. Each length of pipe shall be marked or tagged with the nominal diameter, gauge or class, the name of the manufacturer or his trademark.
4. Bedding and backfill material shall be as specified in Section 02225.
5. Coupling bands shall cover at least one full corrugation on each section of pipe. When gasketed coupling bands are required, the gasket shall be made of closed-cell synthetic expanded rubber meeting the requirements of ASTM D1056, Type 2. Gaskets shall be installed on the coupling band by the pipe manufacturer. All coupling bands shall meet or exceed the soil-tightness requirement of AASHTO Standard Specification for Highway Bridges, Section 23, Paragraph 23.3.1.5.4(e).
6. Pipe fittings shall conform to AASHTO M252 or AASHTO M294. Fittings approved by the ENGINEER are also acceptable.

## 2.03 MANHOLES

A. Precast Units:

1. Structure: 48-inch minimum inside diameter, precast concrete units (4,000 psi minimum compressive strength) with eccentric cone section tapering to 24-inch diameter and monolithic base section meeting the requirements of ASTM C478. All structures shall be designed for HS-20 loading.
2. Precast Unit Joint Seals: Butyl rubber O-ring type seals meeting the requirements of ASTM C990.
3. Openings for pipe and materials to be embedded in the walls of the manhole sections with joint seals cast in the sections at the required locations during manufacturing. Sections with incorrectly cast and patched pipe openings will be rejected. The openings shall be sized to provide a uniform 2-inch maximum annular space between the outside of the pipe wall and the opening in the riser. After the pipe is in position, the annular space shall be solidly filled with nonshrink mortar. Care shall be taken to assure that the openings are located to permit setting of the entering pipe at its correct elevation.
4. The date of manufacture, trademark and name of the manufacturer shall be clearly marked on the inside of each precast Section.

- B. Masonry for Inverts:
  - 1. Brick shall conform to Sewer Brick (Made from Clay or Shale), ASTM designation C32, Grade MS or Building Brick (Solid Masonry Units Made from Clay or Shale), ASTM C62, Grade SW.
  - 2. Concrete block shall be solid block and shall conform to the Specifications for Concrete Masonry Units for Construction of Catch Basins and Manholes, ASTM designation C139.
  - 3. Mortar shall be in conformance with ASTM C270, Type M. The mortar shall be composed of Portland cement hydrated lime, and sand, in the proportions of 1 part cement to 1/4 part hydrated lime to 3-1/2 parts sand by volume.
  - 4. Cement shall be Type I or II Portland cement conforming to ASTM C150, Standard Specification for Portland Cement. Where masonry is exposed to salt water, Type II shall be used.
  - 5. Hydrated lime shall be Type S conforming to ASTM D207.
  - 6. Sand for masonry mortar shall conform to the gradation requirements of ASTM C144.
- C. Manhole steps not required nor allowed.
- D. Manhole Frame and Cover: Grey iron casting conforming to ASTM A48, heavy duty, with word "DRAIN" embossed on cover. Letter size shall be three inches. Frame and cover shall be East Jordan Iron Works Manhole Catalog Number 00211025 or approved equivalent.

#### **2.04 CATCH BASINS AND DROP INLETS**

- A. Precast catch basins and drop inlets shall be manufactured in accordance with ASTM Designation C478 (4,000 psi minimum compressive strength) to the diameters and depths shown on the Drawings. All structures shall be designed for HS-20 loading. Precast unit joints shall be sealed with butyl rubber in accordance with ASTM 990.
- B. Where required for hood, a slot and opening shall be cast in the catch basin wall for mounting the cast iron hood over the outlet pipe.
- C. Cast iron frames and grate shall conform to ASTM A48, Class 30.
- D. Single catch basin and drop inlet frames and grates shall be East Jordan Iron Works Grate Catalog Number 00552060 and Frame Catalog Number 0052411 or approved equivalent for use with gutter inlet or abutting vertical curb (i.e. 3-flanged frame).
- E. Catch basin traps shall be East Jordan Iron Works Catch Basin Hood Catalog Number 5902 sized for the outlet pipes, or approved equivalent.
- F. Openings at top of concrete structures where curb inlets are required shall be 24 inches by 27 inches.

### **PART 3 - EXECUTION**

#### **3.01 STRUCTURE ABANDONMENT**

- A. The bottom of drainage structures to be abandoned shall be broken to allow for drainage through the structure and the manhole shall be backfilled with suitable fill or gravel.

#### **3.02 PIPE INSTALLATION**

- A. As soon as the trench is excavated to the normal grade of the bottom of the trench, the Contractor shall immediately place the bedding material in the trench. The pipe shall be firmly

bedded in the compacted bedding material accurately to the lines and grades shown on the Drawings.

- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions.
- C. Notch under pipe bells and joints where required to provide for uniform bearing under entire length of pipe.
- D. Excavation, backfilling and compaction shall be as specified in Section 02200.
- E. Maintain optimum moisture content of bedding material to attain required compaction density.

### **3.03 STRUCTURE INSTALLATION**

- A. Stormwater structures shall be constructed at the locations and to the lines, grades, dimensions and design shown on Drawings or as required by the City.
- B. Proof roll 12-inch crushed stone base prior to placement of precast base.
- C. Precast concrete units shall be installed in a manner that ensures watertight construction and all leaks in precast concrete structures shall be sealed. If required, precast concrete structures shall be repaired or replaced to obtain watertight construction.
- D. Stubs shall be short pieces of pipe cut from the bell ends of the pipe. Stubs shall be plugged with brick masonry unless otherwise directed by the City.
- E. Inverts shall conform accurately to the size of the adjoining pipes.
  - 1. Inverts shall be constructed of 3,500 psi concrete as shown in the Drawings.
  - 2. Inverts shall be laid out in smooth diameter curves of the longest possible radius to provide uniform flow channels.
  - 3. Invert shelves shall be graded with a 1-inch drop per 1-foot length sloped from the manhole walls.
- F. All holes in sections used for their handling shall be thoroughly plugged with rubber plugs made specifically for this purpose or with mortar. The mortar shall be one part cement to 1-1/2 parts sand, mixed slightly damp to the touch, hammered into the holes until it is dense and an excess of paste appears on the surface, and finished smooth and flush with the adjoining surfaces.
- G. Precast sections shall be level and plumb with approved joint seals. Water shall not be permitted to rise over newly made joints until after inspection and acceptance. All joints shall be watertight.
- H. Openings which have to be cut in the sections in the field shall be carefully made to prevent damage to the riser. Damaged risers will be rejected and shall be replaced at no additional cost to the City.

### **3.04 CASTINGS**

- A. Cast-iron frames for grates and covers shall be well bedded in cement mortar and accurately set to the proposed grades.
- B. All voids between the bottom flange and the structure shall be completely filled to make a watertight fit. A ring of mortar, at least one-inch thick and pitched to shed water away from the frame shall be placed over and around the outside of the bottom flange. The mortar shall extend to the outer edge of the masonry all around its circumference and shall be finished smooth. No visible leakage will be permitted.
- C. Structures within the limits of hot mix asphalt pavement shall be temporarily set at the elevation of the bottom of the binder course. After the binder course has been compacted, the structures



shall be set at their final grade. Backfill necessary around such structures after the binder course has been completed shall be made with 3,500 psi concrete.

END OF SECTION

## SECTION 02500

### ROADWAYS, SIDEWALKS, AND CURBS

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. This Section specifies the requirements for bituminous concrete roadway, temporary trench, and driveway pavements including pavement base course materials. This section also specifies the requirements for bituminous and cement concrete sidewalks and roadway curbing.

##### 1.02 REFERENCE STANDARDS

- A. References herein are made in accordance with the following abbreviations and all work under this Section shall conform to the latest editions as applicable:
1. MS-2: Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types - The Asphalt Institute (AI).
  2. MS-3: Asphalt Plant Manual - The Asphalt Institute (AI).
  3. Hot Mix Asphalt Paving Handbook - US Army Corps of Engineers, UN-13 (CE MP-ET).
  4. MS-19: Basic Asphalt Emulsion Manual - The Asphaltic Institute (AI).
  5. ASTM D946—Specification for Penetration - Graded Asphalt Cement for use in Pavement Construction.
  6. ACI 301 - Specifications for Structural Concrete for Building
  7. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete
  8. ACI 305R - Hot Weather Concreting
  9. ACI 306R - Cold Weather Concreting
  10. ACI 316R - Recommendations for Construction of Concrete Pavements and Concrete Bases
  11. ASTM 185 - Welded Wire Steel Fabric for Concrete Reinforcement
  12. ASTM C33 - Concrete Aggregates
  13. ASTM C94 - Ready-Mixed Concrete
  14. ASTM C143 - Slump of Portland Cement Concrete
  15. ASTM C150 - Portland Cement
  16. ASTM C171 - Sheet Materials for Curing Concrete
  17. ASTM C231 - Air Content of Freshly Mixed Concrete by the Pressure Method
  18. ASTM C260 - Air Entraining Admixtures for Concrete
  19. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete
  20. ASTM C494 - Chemical Admixtures for Concrete
- B. Except as otherwise specified herein, the current Standard Specifications for Highways and Bridges, including all addenda, issued by the Commonwealth of Massachusetts, Department of

Public Works, latest edition (MHDSHB) shall apply to materials and workmanship required for the work of this Section.

- C. Walkways shall comply with Massachusetts Architectural Access Board Code of Massachusetts Regulations 521CMR and the Federal Americans with Disabilities Act.

### **1.03 QUALITY ASSURANCE**

- A. Work and materials for construction of the cement concrete walks shall conform to ACI 316R. Other cast-in-place concrete shall conform to ACI 301.
- B. Work, materials, and color of the wheelchair ramp paving shall conform to applicable sections of Americans with Disabilities Act (ADA) and State standards, whichever is more stringent.

### **1.04 SUBMITTALS**

- A. Bituminous Concrete Design Mix: Before any paving is constructed, submit actual design mix to the Engineer for review and approval. Design mix submittal shall follow the format indicated in the Asphalt Institute Manual MS-2, Marshall Stability Method; and shall include the type/name of the mix, gradation analysis, grade of asphalt cement used, Marshall Stability (lbs.), flow, and effective asphalt content (percent).
- B. Bituminous Concrete Material Certificates: Submit materials certificate signed by the material producer and Contractor, to the independent testing laboratory certifying that materials comply with, or exceed, the requirements herein.
- C. Cement Concrete Design Mixtures: For each concrete mixture, submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
  - 2. Indicate the design strength of the concrete, slump, the mix proportions, brand and type of cement, aggregate source, admixtures, percent entrained air and water-cement ratio.
- D. Material test reports for aggregates, including service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- E. Material Certificates: For each of the following, signed by manufacturers:
  - 1. Cementitious materials
  - 2. Admixtures.
  - 3. Form materials and form release agents.
  - 4. Steel reinforcement and accessories.
  - 5. Bonding agents.
  - 6. Adhesives.
- F. Submit Shop Drawings and Manufacturer's literature for granite and precast curb, edging, corners and inlets, indicating size, shape and dimensions, finish and setting method for Engineer's approval.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Curbing units shall be adequately protected from damage during transit to the site.
- B. Curbing shall be protected against staining, chipping, and other damage. Cracked, badly chipped, or stained units will be rejected and shall not be employed in the work.

### 1.06 COORDINATION

- A. The contractor shall coordinate paving with all other work, especially underground utility construction, to prevent covering up unfinished or uninspected work and loss of time or labor by improper scheduling. Any repaving required shall be done at no additional cost to the Owner.

### 1.07 GUARANTEE

- A. All pavement placed shall be maintained by the Contractor for a period of one year. During this period, all areas that have settled or are unsatisfactory for traffic and as directed by the Engineer or Owner shall be replaced at no additional cost to the Owner.

## PART 2 - PRODUCTS

### 2.01 STONE BASE COURSES

- A. Dense Graded Crushed Stone for base and sub-base shall conform to the requirements of MHDSSHB Section M.2.01.7.
- B. Gravel Borrow shall conform to the requirements of MHDSSHB Section M.1.03.0 Type c.

### 2.02 BITUMINOUS CONCRETE PAVEMENT

- A. Mineral Aggregate: Comply with the requirements of MHDSSHB M3.11.04.
- B. Asphalt Cement: Comply with AASHTO M-226/ASTM D 3381; Table 2 for grades AC-10, AC-20, or AC-30, AR-8000, viscosity grade, depending on local mean annual air temperature, as specified in MHDSSHB M3.11.03 Table A.
- C. Mineral Filler: Comply with the requirements of AASHTO M-17/ASTM D 242 and MHDSSHB M3.11.05.
- D. Asphalt-Aggregate Mixture: the design mix shall have a minimum stability based on a 50-blow Marshall Method, complying with AASHTO T245 (ASTM D 1559), of 1200 lb. with a flow between 8 and 16. The Design Mix shall be as specified in Table A of MHDSSHB M3.11.03.
  - 1. Bituminous concrete pavement wearing or top course shall conform to the requirements for Modified Top Course as specified in Table A. The maximum allowable percentage of wear, as determined by the L.A. Abrasion Test (AASHTO-T96), shall be 35 percent.
  - 2. Bituminous concrete pavement binder course shall conform to the requirements for Dense Binder Course as specified in Table A. The maximum allowable percentage of wear, as determined by the L.A. Abrasion Test (AASHTO-T96), shall be 35 percent.
  - 3. Bituminous concrete pavement for sidewalks and driveways shall conform to the requirements for Dense Mix as specified in Table A. The maximum allowable percentage of wear, as determined by the L.A. Abrasion Test (AASHTO-T96), shall be 35 percent.
  - 4. Bituminous concrete pavement for trenches shall conform to the requirements for Binder Mix as specified in Table A.
- E. Tack coat, where required, shall be asphalt emulsion, grade RS-1.

### 2.03 CEMENT CONCRETE

- A. Cementitious Material: Use Portland Cement conforming to ASTM C150, Type II, of the same type, brand, and source, throughout Project.
- B. Cement concrete shall meet the following requirements:
  - 1. 4000 psi compressive strength, unless noted otherwise on the Drawings.
  - 2. Maximum water : cement ratio of 0.45 conforming to ACI 316R.

3. Air-entrained conforming to ASTM C94. Air content by volume shall be 6% +/- 1%, in accordance with ASTM C260.
  4. Slump between 3 and 4-inches as determined by ASTM C143.
  5. Include a water reducing agent conforming to ASTM C494, Type A.
  6. Containing no calcium chloride or admixtures containing calcium chloride.
- C. Normal-Weight Aggregates: ASTM C33, Class 4S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
  2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Water: ASTM C94/C94M and potable.
- E. Reinforcing: Concrete shall be fiber-reinforced.
- F. Expansion Joint Material:
1. Compressible filler: Provide asphalt impregnated preformed expansion joint filler which shall be non-extruding, resilient and shall conform to AASHTO M213 requirements for premolded rigid cane fiber board impregnated throughout with asphaltic compound.
    - a. The Contractor shall provide certificate that the asphalt cement content is at least 35% by weight of the filler.
    - b. All expansion joints shall be a minimum of 1/2" thick and full depth of slab thickness.
  2. Joint sealer: For use at expansion joints shall meet Federal Specification TT-S-00230C, Type II, Class A, and shall be a sealing compound, synthetic, rubber case, single component, chemically curing material.
- G. Form Materials:
1. The contractor shall utilize steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal.
    - a. Use straight forms, free of distortion and defects.
    - b. Use flexible spring steel forms or laminated boards to form radius bends as required.
  2. Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.
- H. Curing Materials:
1. Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
  2. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
  3. Water: Potable.
- I. Concrete Mixing:
1. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M, and furnish batch ticket information.

When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

2. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.
  - a. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
  - b. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
  - c. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

#### **2.04 GRANITE CURB**

- A. Granite curb shall be basically light gray in color, free from seams and other structural imperfections or flaws which would impair its structural integrity, and of a smooth splitting appearance. Natural color variation characteristic of the deposit from which the curb is obtained will be permitted.
- B. Granite curb shall meet the requirements for Granite Curb Type VB per MHDSSHB M9.04.01.
- C. Whenever curbing is sawed, all surfaces that are to be exposed shall be thoroughly cleaned and any iron rust or iron particles removed by sand blasting or other methods approved by the City and any saw mark in excess of 1/8-inch shall be removed.

#### **2.05 CURB TRANSITION SECTIONS**

- A. Horizontal transition sections shall be provided at all locations where curb sections change (i.e., vertical to sloped). Vertical transition sections shall also be provided for curb sections at wheelchair ramps. Vertical transition sections for granite curb shall be made as shown on the Drawings.

### **PART 3 - EXECUTION**

#### **3.01 BITUMINOUS CONCRETE PAVEMENT**

- A. The Contractor shall install all pavements in the location and to the grades shown on the Drawings, or approved by the Engineer. The type and thickness of pavement courses shall be as shown on the Drawings.
- B. All work and equipment shall be as specified in MHDSSHB Section 460.
- C. Materials for pavement shall be mixed, delivered, placed and compacted in accordance with Massachusetts Highway Standard Specifications, Sections M3.11 and 460 and as specified herein.
- D. Temporary Trench Pavement
  1. Where specified and as directed by the Engineer and after placement of the gravel subbase, temporary hot mix asphalt pavement shall be placed above the trench, between the edges of the existing pavement. Temporary trench pavement shall be installed to the dimensions shown on the drawings.

2. The temporary trench pavement shall be repaired as necessary to maintain the surface of the pavement until completion of the contract. When a depression of one half inches in depth is observed, the Contractor shall apply a leveling course of hot mix asphalt.

E. Field Quality Control

1. Independent Testing Laboratory, selected and paid by Owner, may be retained to perform construction testing of in-place hot mix asphalt courses for compliance with requirements for thickness and surface smoothness.
2. Thickness: In-place compacted thickness shall not be less than thickness specified on the drawings. Areas of deficient paving thickness shall receive a tack coat and a minimum one-inch (1") compacted thickness overlay; or shall be removed and replaced to the proper thickness, at the discretion of the Engineer, until specified thickness of the course is met or exceeded at no additional cost to the Owner.

F. Meeting Existing Pavements:

1. Where new pavements will abut existing pavements, the Contractor shall sawcut the existing pavements to produce a uniform, smooth joint surface. Sawcutting of existing pavements shall be neat, straight and even lines, and done in a manner that prevents damage to the pavement to remain.
2. Full-Depth Pavement—Sawcut by approved method to the full depth of the pavement prior to placement of any new pavement. The sawcut surface shall be a neat true line with straight vertical edges free from irregularities. The sawcut surface shall be tack coated immediately prior to the installation of the new abutting hot mix asphalt material to provide a bond between the old and new pavement. The new compacted pavement surface shall be finished flush with the abutting pavement.
3. Bituminous Concrete Overlays: The existing bituminous concrete pavement shall be sawcut to a neat true line with straight vertical edges free of irregularities for a minimum depth of one and one half inches. One and one-half inches of pavement shall be removed to form a transition section across the entire pavement width and with a length of two feet at driveways and six feet in roadways and parking areas. Immediately prior to the placement of the bituminous concrete overlay, the sawcut edges of the existing pavement shall be tack coated to bond the new pavement to the old pavement. The new pavement surface shall be finished flush with the abutting pavement. The surface seam of the pavement joint shall be sealed with tack coat and back sanded.

**3.02 CEMENT CONCRETE**

- A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section. Remove loose material from compacted sub-base surface immediately before placing concrete.
- B. Proof-roll prepared sub-base surface to check for unstable areas and need for additional compaction. Do not begin paving work until such conditions have been corrected and are ready to receive paving.
- C. Formwork:
  1. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
  2. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
  3. Construct forms tight enough to prevent loss of concrete mortar.

4. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces.
  5. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
  6. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
  7. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- D. Expansion Joints:
1. General: Construct expansion joints true to line with face perpendicular to surface of concrete. If joints are not installed and constructed as indicated within the drawings and specified herein the Engineer shall instruct the Contractor to remove and dispose those areas identified as non-compliant. The Contractor shall repair, replace or install new concrete in those areas identified at no additional cost to the owner.
  2. Verify location of expansion joints as indicated within the drawings and their relationship to other work.
  3. Where expansion joints are not shown, the Contractor shall provide expansion joints a minimum twenty (20) feet on center in any direction and where concrete abuts all vertical surfaces and/or fixed construction including but not limited to; buildings, structures, walls, stairs, light poles and curbs.
  4. Provide premolded joint filler for expansion joints abutting curbs, catch basins, manholes, inlets, structures, walks, and all other fixed objects, unless otherwise indicated.
  5. Protect top edge of joint filler during concrete placement with a metal cap or other temporary material. Remove protection after concrete has been placed on both sides of joint.
- E. Contraction and Construction Joints
1. General: Construct contraction and construction joints true to line with face perpendicular to surface of concrete. If joints are not installed and constructed as indicated within the drawings and specified herein the Engineer shall instruct the Contractor to remove and dispose those areas identified as non-compliant. The Contractor shall repair, replace or install new concrete in those areas identified at no additional cost to the owner.
  2. Contraction Joints: Provide contraction joints, sectioning concrete into areas as shown on drawings to a depth equal to at least 1/3 concrete thickness in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a joiner.
  3. Construction Joints: Place construction joints at end of placements and at expansion joints.
- F. Concrete Placement:
1. Do not place concrete until sub-base and forms have been checked for line and grade. Moisten sub-base if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
  2. Work shall not be performed during rainy weather or when temperature is less than 40°F (4.4°C).
  3. Adjacent work shall be protected from stain and damage. Damaged and stained areas shall be replaced or repaired to equal their original conditions.



4. Existing concrete, earth, and other water-permeable material against which new concrete is to be placed shall be thoroughly damp when concrete is placed. There shall be no free water on surface.
  5. Concrete which has set or partially set, before placing shall not be used. Retempering of concrete will not be permitted.
  6. Place concrete by methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.
  7. Deposit and spread concrete in a continuous operation between transverse joints as far as possible. If interrupted for more than hour, place a construction joint.
  8. Do not place concrete on a soft, muddy or frozen base course. Do not permit workmen to walk in the concrete with boots or shoes covered with earth or other foreign substances.
  9. Place lower layer of concrete followed promptly by the welded wire fabric and then place the upper layer of concrete. Remove any portions of the bottom layer of concrete which have been placed more than fifteen (15) minutes without being covered with top layer and replace with freshly mixed concrete.
  10. Consolidate concrete thoroughly by tamping, spading and vibrating to eliminate honeycombing and voids. Space carefully to avoid dislocation of reinforcing materials, dowels and joints installing devices.
  11. When joining fresh concrete to concrete which has attained full set, latter shall be cleaned of foreign matter, and mortar laitance shall be removed by chipping and washing. Clean, roughened base surface shall be saturated with water, but shall have no free water on surface. A coat of 1:1 cement-sand grout, approximately 1/8 inch thick, shall be well scrubbed into the thoroughly dampened concrete base. New concrete shall be placed immediately, before grout has dried or set.
  12. Hot-Weather Placement: Comply with ACI 301 and as follows:
    - a. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
    - b. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
- G. Finishing:
1. After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to produce uniform texture.
  2. After floating, test surface for trueness with a ten (10) foot straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.
  3. Work edges of slabs and formed joints with an edging tool, and round to one half-inch radius or as indicated within the drawings.
  4. Eliminate tool marks on concrete surface.

5. After completion of floating and when excess moisture or surface sheen has disappeared, complete trowelling and finish surface by drawing a broom across concrete surface perpendicular to line of traffic. On inclined slab surfaces, provide a coarse, non-slip finish by scoring surface with a stiff-bristled broom, perpendicular to line of traffic.
6. Do not remove forms for twenty-four (24) hours after concrete has been placed. After form removal, clean ends of joints and joint-up any minor honeycombed areas. Remove and replace areas of sections with major defects, as directed by the Engineer.

H. Curing:

1. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
2. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
3. Formed Surfaces: Cure formed concrete surfaces, including supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
4. Unformed Surfaces: Begin curing unformed surfaces including approach slabs and other surfaces immediately after finishing concrete.
5. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  - a. Moisture Curing: Keep surfaces continuously moist for not less than seven days with water, continuous water-fog spray, or an absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  - b. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

I. Repairs and Protection:

1. Repair or replace broken or defective concrete, as directed by the Engineer.
2. Drill test cores where directed by the Engineer when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland Cement concrete bonded to pavement with epoxy adhesive.
3. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least fourteen (14) days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
4. Sweep concrete pavement and wash free of stains, discoloration, dirt, and other foreign material one (1) week prior to substantial completion.

**3.03 GRANITE CURB INSTALLATION**

- A. The foundation for the curb shall consist of concrete spread upon the subgrade and after being thoroughly compacted by tamping shall be 6-inches in depth.

- B. The curbing shall be set on edge and settled into place with a heavy wooden hand-rammer, to the line and grade required, straight and true for the full depth.
  - 1. The joints of curb and edging shall be filled with mortar for the full depth and width of the curb, and neatly pointed on the top and front exposed portions. After pointing, the curb and edging shall be cleaned of all excess mortar.
  - 2. The ends of the stone curb at driveways and intersections shall be cut at a bevel or rounded, as shown on the Drawings.
  - 3. Wheelchair ramps shall be constructed with transition sections, as shown on the Drawings.
- C. Immediately after curb is set and jointed, the trench shall be backfilled with concrete and approved material and compacted.
- D. Procedures for removal and resetting of existing granite curb, and new granite curb, in existing pavements shall include the following:
  - 1. Prior to excavation for existing granite curb removal, the pavement surface shall be cut a minimum of one foot from the face of curb with appropriate pavement cutting equipment.
  - 2. Existing curb shall be carefully excavated, and removed in a manner that protects the curb and existing pavement to remain from damage.
  - 3. Existing granite curb shall be cleaned by sandblasting as required to remove of bituminous material, paint and concrete from exposed surfaces prior to resetting in the proposed work.
  - 4. New granite curb shall be set to match the top of existing granite curb remaining in place at abutting sections and, if required, transitioned to the typical section shown on Drawings within the first section of curb.

END OF SECTION

**SECTION 02570**  
**SANITARY SEWERAGE SYSTEM**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section specifies requirements for the sanitary sewerage systems.

**1.02 SUBMITTALS**

- A. Shop Drawings:
1. Materials list of items proposed for the work.
  2. Shop drawings or descriptive literature, or both, showing dimensions, joint and other details of all materials proposed for the work. Shop drawings shall be submitted to the Engineer for approval prior to ordering material.
- B. As-Built Drawings:
1. Submit 1 hard copy and an electronic (AutoCAD drawing or PDF) of As-Built Drawings upon completion and acceptance of work.
  2. As-Built Drawings shall be complete and shall indicate the true measurements and locations, horizontal and vertical, of all new construction. As-Built Drawings shall include a minimum of three ties to each gate valve box from fixed permanent objects. As-Built Drawings shall also contain any additional information required by the municipality, and shall be stamped with the seal of a Licensed Land Surveyor and Licensed Professional Engineer.

**1.03 INSPECTION**

- A. The supplier is responsible for the provisions and all test requirements specified in this Section. In addition, all PVC pipe may be inspected at the plant for compliance with these specifications by an independent testing laboratory selected and paid by the Owner. The Contractor shall require the manufacturer's cooperation in these inspections.
- B. Inspection of the pipe may also be made after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the specification requirements, even though pipe samples may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall be removed from the site at once.
- C. Imperfections in materials maybe repaired, subject to approval of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval.

**1.04 DELIVERY, STORAGE, AND HANDLING**

- A. All materials shall be adequately protected from damage during transit. Pipes shall not be dropped.
- B. All pipe and other appurtenances shall be inspected before placement in the work and any found to be defective from any cause, including damage caused by handling, and determined by the Engineer to be un-repairable, shall be replaced at no cost to the Owner.
- C. Storage and handling of pipes, manholes and other sewer system appurtenances shall be in accordance with the manufacturer's recommendations, subject to the approval of the Engineer.

## **PART 2 - PRODUCTS**

### **2.01 POLYVINYL CHLORIDE (PVC) PIPE**

- A. All PVC pipe and fittings shall be type PSM, PVC SDR 35 with full diameter dimensions and shall conform to ASTM D3034, or type PS-46 PVC conforming to ASTM F789.
- B. Joints: PVC pipe shall have an integral wall bell and spigot push-on joint with elastomeric gaskets secured in place in the bell of the pipe. The bell shall consist of an integral wall section with a solid cross section elastomeric gasket, factory assembled, securely locked in place to prevent displacement during assembly. Elastomeric gaskets shall conform to ASTM F477.
- C. Plastic force main pressure piping and fittings shall be a high density, high molecular weight polyethylene resin which meets the criteria for a Type III, Class C, Category 5, Grade PE34 piping material in accordance with ASTM D3350. Plastic pressure pipe shall comply with ASTM D3261, Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing and AWWA C906-99, Polyethylene (PE) Pressure Pipe and Fittings, and shall be SDR11 HDPE, or equivalent.
- D. Wyes shall be furnished in lengths of not more than 3 feet. Saddle wyes will not be allowed.
- E. All fittings and accessories shall have bell and/or spigot configurations compatible with the pipe.

### **2.02 MANHOLES**

- A. Precast Units:
  - 1. Structure: 48-inch minimum inside diameter, precast concrete units (4,000 psi minimum compressive strength) with eccentric cone section tapering to 24-inch diameter and monolithic base section meeting the requirements of ASTM C478. All structures shall be designed for HS-20 loading.
  - 2. Manholes shall be provided with a seal around the precast joints and other potential infiltration points in the interior of the manhole. These seals shall be NPC Flexrib Seals or equal.
  - 3. Openings for pipe and materials to be embedded in the walls of the manhole sections with joint seals cast in the sections at the required locations during manufacturing. Sections with incorrectly cast and patched pipe openings will be rejected. The openings shall be sized to provide a uniform 2-inch maximum annular space between the outside of the pipe wall and the opening in the riser. Care shall be taken to assure that the openings are located to permit setting of the entering pipe at its correct elevation.
  - 4. The date of manufacture, trademark and name of the manufacturer shall be clearly marked on the inside of each precast Section.
- B. Masonry for Inverts:
  - 1. Brick shall conform to Sewer Brick (Made from Clay or Shale), ASTM designation C32, Grade MS or Building Brick (Solid Masonry Units Made from Clay or Shale), ASTM C62, Grade SW.
  - 2. Concrete block shall be solid block and shall conform to the Specifications for Concrete Masonry Units for Construction of Catch Basins and Manholes, ASTM designation C139.
  - 3. Mortar shall be in conformance with ASTM C270, Type M. The mortar shall be composed of Portland cement hydrated lime, and sand, in the proportions of 1 part cement to 1/4 part hydrated lime to 3-1/2 parts sand by volume.

4. Cement shall be Type I or II Portland cement conforming to ASTM C150, Standard Specification for Portland Cement. Where masonry is exposed to salt water, Type II shall be used.
  5. Hydrated lime shall be Type S conforming to ASTM D207.
  6. Sand for masonry mortar shall conform to the gradation requirements of ASTM C144.
- C. Pipe Connections: Flexible sleeve or rubber gaskets shall be Lock Joint, Kor-n-Seal, A-Lok or approved equivalent.
- D. Manhole steps are not required nor allowed.
- E. Manhole Frame and Cover: Grey iron casting conforming to ASTM A48, heavy duty, with word "SEWER" embossed on cover. Letter size shall be three inches. Frame and cover shall be East Jordan Iron Works Manhole Catalog Number 00211023 or approved equivalent.
- F. Bitumastic Coating: The entire exterior surface of all manholes shall be coated with two coats of an approved bitumastic material to produce a dry film thickness of 0.07 inches (7 mils) per coat.

### **PART 3 - EXECUTION**

#### **3.01 EXCAVATION AND BACKFILLING**

- A. The type of materials to be used in bedding and backfilling and the method of placement shall conform to the requirements of Section 02200, and the details shown on the Drawings.

#### **3.02 MANHOLE ABANDONMENT**

- A. The bottom of manholes to be abandoned shall be broken to allow for drainage through the structure and the manhole shall be backfilled with suitable fill or gravel.

#### **3.03 PIPE INSTALLATION**

- A. All sewer pipes shall be laid accurately to the lines and grades shown in the Drawings and in conformance with pipe manufacturer's recommended procedures.
- B. Notch under pipe bells and joints, where applicable, to provide for uniform bearing under entire length of pipe.
- C. Laying Pipe: Each length of pipe shall be laid with firm, full and even bearing throughout its entire length, in a prepared trench. Pipe shall be laid with bells upgrade unless otherwise approved by the Engineer.

Every length of pipe shall be inspected and cleaned of all dirt and debris before being laid. The interior of the pipe and the jointing seal shall be free from sand, dirt and trash. Extreme care shall be taken to keep the bells of the pipe free from dirt and rocks so that joints may be properly lubricated and assembled. No pipe shall be trimmed or chipped to fit.

No length of pipe shall be laid until the preceding lengths of pipe have been thoroughly embedded in place, to prevent movement or disturbance of the pipe alignment.

- D. Pipe Extension: Where an existing pipe is to be extended, the same type of pipe shall be used, unless otherwise approved by the Engineer.
- E. Full Lengths of Pipe: Only full lengths of pipe shall be used in the installation except that partial lengths of pipe may be used at the entrance to structures, and to accommodate the required locations of service connection fittings.

F. Pipe Entrances to Structures: All pipe entering structures shall be cut flush with the inside face of the structure, and the cut ends of the pipe surface within the structure shall be properly rounded and finished so that there will be no protrusion, ragged edges or imperfections that will impede or affect the hydraulic characteristics of the sewage flow. The method of cutting and finishing shall be subject to the approval of the Engineer.

G. Protection During Construction: The Contractor shall protect the installation at all times during construction, and movement of construction equipment, vehicles and loads over and adjacent to any pipe shall be performed at the Contractor's risk.

At all times when pipe laying is not in progress, all open ends of pipes shall be closed by approved temporary water-tight plugs. If water is in the trench when work is resumed, the plug shall not be removed until the trench has been dewatered and all danger of water entering the pipe eliminated.

H. Water Pipe - Sewer Pipe Separation: When a sewer pipe crosses above or below a water pipe, the following procedures shall be utilized. The Contractor shall comply with these following procedures:

1. Relation to Water Mains

a. *Horizontal Separation*: Whenever possible sewers shall be laid at a minimum at least 10 feet, horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of 10 feet, a sewer may be laid closer than 10 feet to a water main if:

- i. It is laid in a separate trench, or if
- ii. It is laid in the same trench with the water mains located at one side on a bench of undistributed earth, and if
- iii. In either case the elevation of the top (crown) of the sewer is at least 18 inches below the bottom (invert) of the water main.

b. *Vertical Separation*: Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be varied to meet the above requirements, the water main shall be relocated to provide this separation or reconstructed with mechanical-joint pipe for a distance of 10 feet on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible.

c. When it is impossible to obtain horizontal and/or vertical separation as stipulated above, both the water main and sewer shall be constructed of mechanical-joint cement lined ductile iron pipe or other equivalent based on watertightness and structural soundness. Both pipes shall be pressure tested by an approved method to assure watertightness or both pipes shall be encased in concrete.

### 3.04 PIPE JOINTS

- A. All joints shall be made watertight.
- B. Pipe shall be jointed in strict accordance with the Pipe manufacturer's instruction. Jointing of all pipes shall be done entirely in the trench.
- C. Lubricant for jointing of PVC pipe shall be applied as specified by the pipe manufacturer. Use only lubricant supplied by the pipe manufacturer.
- D. PVC Pipe shall be pushed home by hand or with the use of bar and block. The use of power equipment, such as a backhoe bucket, shall only be used at the direction of the manufacturer.

- E. Field-cut pipe ends shall be cut square and the pipe surface beveled to the size and shape of a factory-finished beveled end. All sharp edges shall be rounded off.

### 3.05 MANHOLES

- A. General Requirements: All manholes shall be built in accordance with the Details and in the locations shown on the Drawings.

Manholes shall be constructed as soon as the pipe laying reaches the location of the manhole. Should the Contractor continue pipe laying without making provision for completion of the manhole, the Engineer shall have the authority to stop the pipe laying operations until the manhole is completed.

The Contractor shall accurately locate each manhole and set accurate templates to conform to the required line and grade. Any manhole which is mislocated or oriented improperly shall be removed and rebuilt in its proper location, alignment and orientation at no additional cost to the Owner

- B. Foundations: All manholes shall be constructed on a 12-inch layer of compacted crushed stone. The excavation shall be dewatered to provide a dry condition while placing bedding material and setting the base.
- C. Inverts: Brick invert channels shall be constructed in all manholes to provide a smooth channel for sewage flow through the structure, and shall correspond in shape to the lower half of the pipe. At changes in directions, the inverts shall be laid out in curves of the longest possible radii tangent to the centerline of the sewer pipes at the manhole side. Shelves shall be constructed to the elevation of the highest pipe crown and sloped to drain toward the flow channel.

Special care shall be taken in laying brick inverts. Joints shall not exceed three-sixteenth inch in thickness and each brick shall be carefully laid in full cement mortar joints on bottom, side and end in one operation. No grouting or working in of mortar after laying of the brick will be permitted. Bricks forming the shaped inverts in manholes shall be laid on edge.

Invert channels shall be built for future extensions where shown on the Drawings and where directed by the Engineer.

- D. Precast Manholes: Precast manholes shall be installed only after Shop Drawings have been approved.

The top grade of the precast concrete cone section shall be set sufficiently below finished grade to permit a maximum of five and a minimum of two courses of eight inch brick to be used as risers to adjust the grade of the manhole frame. Manhole frames shall be set on a grout pad to make a watertight fit.

### 3.06 CONNECTIONS TO EXISTING FACILITIES

- A. General Requirements: The Contractor shall make all required connections of the proposed sewer into existing sewer system, where and as shown on the Drawings and as required by the Engineer.
- B. Compliance with Requirements of Owner of Facility: Connections into existing sewer facilities shall be performed in accordance with the requirements of the Owner of the facility. The Contractor shall comply with all such requirements, including securing of all required permits, and paying the costs thereof. The costs of making the connections in accordance with the requirements of the owner of the existing facility shall be included in the Contract Sum and separate payment will be made.



### 3.07 MANHOLE CONNECTIONS

- A. Manhole pipe connections for precast manhole bases may be accomplished by any method described below. The Contractor shall make sure that the outside diameter of the pipe is compatible with the particular pipe connection used.
1. The LOCK JOINT Flexible Manhole Sleeve cast in the wall of the manhole base. The stainless steel strap and exposed sleeve shall be protected from corrosion with a bitumastic coating.
  2. PRESS WEDGE II gasket cast into the wall on the manhole base. The rubber wedge shall only be driven into the V slot from the outside of the manhole.
  3. The RES-SEAL, a cast iron compression ring which compresses a rubber "O" ring gasket into a tapered hole in the wall of the manhole base. Exposed metal shall be protected from corrosion with a bitumastic coating.
  4. KOR-N-SEAL neoprene boot cast into the manhole wall. The stainless steel clamp shall be protected from corrosion with a bitumastic coating.
- B. Sewer manholes shall be constructed with drop connections when the proposed invert of the connection is at least 2 feet above the manhole invert. Drop connections for differences of less than 2 feet shall also be provided if required by the governing authority.

### 3.08 SERVICE CONNECTIONS

- A. General Requirements: The Contractor shall make all required connections of the building sewer service pipes into the sewer system. Work shall include making the service pipe connections into the sewer system pipes or into the manholes located ten (10) feet outside of the proposed building lines. If stubs are constructed for later connection to the building pipes, the ends shall be sealed with watertight plugs.
- B. Coordination with Building Contractor: The Contractor shall coordinate the work with the work of the Building Contractor to determine the exact location and elevation of the point of entry into the building.
- C. Connection into Sewer System: Sewer service pipe connections to the pipe of the sewer system shall be made with fittings supplied by the pipe manufacturer.

### 3.09 LEAKAGE TESTS

- A. General Requirements: The Contractor shall test the completed sewer system, including manholes and service connections, for leakage by infiltration, exfiltration or low-pressure air exfiltration tests. The tests shall be conducted as approved by the Engineer. The Contractor shall furnish all necessary equipment, materials and labor for performing the tests.

The Contractor shall notify the Engineer at least 48 hours prior to the start of testing. Testing shall only be performed in the presence of the Engineer.

Sections of pipe tested for infiltration and exfiltration prior to completion of the Contract shall be subject to additional leakage tests, if warranted, in the opinion of the Engineer, prior to acceptance of the Work.

- B. Infiltration and Exfiltration Testing: The test length intervals for either type of leakage test shall be approved by the Engineer, but in no event shall they exceed one thousand feet. Where sewer pipe is laid on steep grades, the length to be tested by exfiltration at any one time shall be limited by the maximum allowable internal pressure on the pipe and joints at the lower end of the line. The maximum internal pressure at the lowest end shall not exceed 25 feet of water or 10.8 psi.

The test period, wherein the measurements are taken, shall not be less than four hours in either type of test.

Depending on field conditions, the following tests for leakage shall be employed:

1. Infiltration Test: The test may be used only when ground water levels are at least five feet above the top of the pipe for the entire length of the section to be tested during the entire period of the test. Ground water levels may be measured in an open trench or in standpipes previously placed in backfilled trenches during the backfilling operations. When standpipes are installed in the backfill for ground water measurement, the lower ends shall be satisfactorily embedded in a mass of crushed stone or gravel to maintain free percolation and drainage. Infiltration through joints shall be measured by using a watertight weir or any other approved device for volumetric measurement installed at the lower end of the section under test.
2. Exfiltration Test: This test consists of filling the pipe with water to provide a head of at least five feet above the top of the pipe or five feet above ground water, whichever is higher, at the highest point of the pipe section under test, and then measuring the loss of water from the line by the amount which must be added to maintain the original level. In this test, the pipe must remain filled with water for at least twenty-four hours prior to the taking of measurements. Exfiltration shall be measured by the drop of water level in a closed-end standpipe or in one of the sewer manholes available for convenient measuring.

When a standpipe and plug arrangement is used in the upper manhole of a section under test, a positive method of releasing entrapped air in the sewer shall be installed prior to taking measurements.

3. Leakage Requirements: The total leakage of any section tested shall not exceed the rate of 50 gallons per day per mile per inch of nominal pipe diameter. For purposes of determining the maximum allowable leakage, manholes shall be considered as sections of 48-inch diameter pipe, five feet long, and the equivalent leakage allowance shall be 2.25 gallons per manhole per 24 hours.

C. Low-Pressure Air Exfiltration Testing

1. The sewer pipes and service pipes shall be tested for leakage by the use of low-pressure air as approved by the Engineer. The test length shall not exceed one length of pipe between two manholes. Air test procedures may be dangerous and the Contractor shall take all necessary precautions to prevent blowouts.
  - a. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be tested.
  - b. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
  - c. All air used shall pass through a single control panel.
  - d. Three individual hoses shall be used for the following connections:
    - i. From control panel to pneumatic plugs for inflation;
    - ii. From control panel to sealed line for introducing the low pressure air;
    - iii. From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.
2. The following testing procedures shall be explicitly followed: All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to 25 psig. The sealed pipe shall be pressurized to 5 psig.

The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

3. After the pipe has been backfilled and cleaned, pneumatic plugs shall be placed in the line at each manhole and inflated to 25 psi. Low-pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psi greater than the average backpressure of any ground water that may be over the pipe. At least two minutes shall be allowed for the air pressure to stabilize.

After the stabilization period (3.5 psi minimum pressure in the pipe), the portion of pipe tested shall be acceptable if the time required in minutes for the pressure to decrease from 3.5 to 3.0 psi (greater than the average back pressure of any ground water that may be over the pipe) is not less than the time indicated in the following table:

<u>Pipe Size (in.)</u>	<u>Time (sec.)</u>
4	0.190L
6	0.427L
8	0.760L
10	1.187L
12	1.709L
15	2.671L

L = length of pipe being tested

- D. Correction of Defective Work: If leakage exceeds the specified amount, the Contractor shall make the necessary repairs or replacements required to permanently reduce the leakage to within the specified limit, and the tests shall be repeated until the leakage requirement is met.
- E. Compliance with Agency Requirements: In the event of conflict between the leakage test requirements specified herein with the leakage test requirements of agencies having jurisdiction over all or any portion of the sewer system installed under this Contract, the more restrictive requirements shall govern.

### 3.10 DEFLECTION TESTING

- A. Allowable Deflection Test:
  1. Pipe deflection measured not less than ninety days (90) after the backfill has been completed as specified shall not exceed five (5.0) percent. Deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
  2. Deflection shall be measured with a rigid mandrel (Go/No-Go) device cylindrical in shape and constructed with a minimum of nine or ten evenly spaced arms or prongs. Drawings of the mandrel with complete dimensions shall be submitted to the Engineer for each diameter of pipe to be tested. The mandrel shall be hand pulled by the Contractor through all sewer lines.
  3. Any section of sewer not passing the mandrel shall be uncovered at the Contractor's expense and the bedding and backfill replaced to prevent excessive deflection. Repaired pipe shall be retested.

**3.11 CASTINGS**

- A. Cast-iron frames for covers shall be well bedded in cement mortar and accurately set to the proposed grades.
- B. All voids between the bottom flange and the structure shall be completely filled to make a watertight fit. A ring of mortar, at least one-inch thick and pitched to shed water away from the frame shall be placed over and around the outside of the bottom flange. The mortar shall extend to the outer edge of the masonry all around its circumference and shall be finished smooth. No visible leakage will be permitted.
- C. Structures within the limits of hot mix asphalt pavement shall be temporarily set at the elevation of the bottom of the binder course. After the binder course has been compacted, the structures shall be set at their final grade. Backfill necessary around such structures after the binder course has been completed shall be made with 3,500 psi concrete.

**3.12 CLEANING AND REPAIR**

- A. The Contractor shall clean the entire sewer system of all debris and obstructions. This shall include, removal of all formwork from structures, concrete and mortar droppings, construction debris and dirt. The system shall be thoroughly flushed clean and the Contractor shall furnish all necessary hose, pumps, pipe and other equipment that may be required for this purpose. No debris shall be flushed into existing sewers, storm drains and or streams. All work of cleaning and repair shall be performed at no additional cost to the Owner.

**3.13 FINAL INSPECTION**

- A. Upon completion of the work, and before final acceptance by the Engineer, the entire sewer system shall be subjected to a final inspection in the presence of the Engineer. The work shall not be considered as complete until all requirements for line, grade, cleanliness, leakage tests and other requirements have been met.

END OF SECTION

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## SECTION 02584

### PAVEMENT MARKINGS AND SIGNAGE

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. This Section specifies requirements for removal of old pavement markings and installation of new pavement markings as well as installation of permanent signage.
- B. The work includes:
  - 1. Pavement surface preparation
  - 2. Furnishing and installing new pavement markings
  - 3. Furnishing and installing permanent regulatory and way finding signs

##### 1.02 SITE CONDITIONS

- A. The Contractor shall cordon off areas where markings are being applied, but maintain access for vehicular and pedestrian traffic as required for other construction activities. Flagmen, barricades, drums, warning signs, warning lights and similar devices shall be used as required.

##### 1.03 SUBMITTALS

- A. Submit material certificate to the City, signed by the material producer and contractor, certifying that materials comply with these specifications and have been approved for use by the Commonwealth of Massachusetts, Department of Transportation (MassDOT) Highways Division.

#### PART 2 - PRODUCTS

##### 2.01 PAVEMENT MARKINGS

- A. Pavement markings shall conform to Commonwealth of Massachusetts Highway Department Standard Specifications for Highways and Bridges (MHDSSHB) Section 860 Reflectorized Pavement Markings and the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD).

##### 2.02 SIGNAGE

- A. All signs shall be supplied by the Contractor as shown on the Drawings and shall be in accordance with MHDSSHB Section 828 Traffic Signs.
- B. Sign posts shall be of type shown on the Drawings and shall be in accordance with MHDSSHB Section 840 Sign Supports.

#### PART 3 - EXECUTION

##### 3.01 PREPARATION

- A. The Contractor shall clean the pavement of dust, dirt, old pavement markings, concrete curing compounds and other foreign material which may be detrimental to the adhesion of the marking material.

**3.02 PAVEMENT MARKING APPLICATION**

- A. The material shall be applied to the pavement by equipment designed and manufactured specifically for the application of pavement markings and in accordance with MHDSSHB Specification Section 860 ReflectORIZED Pavement Markings.
- B. Pavement markings shall be applied in accordance with the layout shown on the drawings.
- C. All parking stall markings shall be straight with sharp corners and clean edges. Stop lines and cross walk lines shall be to the size, length, and spacing shown on the Drawings.
- D. Use only skilled workmen who are experienced and normally employed in the work of installing pavement markings. Supply all the necessary equipment and materials required for the work.
- E. Traffic shall not be permitted on the pavement until the markings are thoroughly dry.

**3.03 SIGN INSTALLATION**

- A. Signs shall be installed at the locations and directions as shown on the Contract Drawings and in accordance with the latest edition of the MUTCD with Massachusetts Amendments, the latest edition of the MHDSSHB, and any local requirements.

END OF SECTION

**SECTION 02610**  
**WATER SUPPLY SYSTEM**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section specifies requirements for the proposed water system pipe, fittings appurtenances and services.
- B. The work includes:
  - 1. Furnishing and installing a temporary water distribution system during the entire replacement of the existing until the permanent system has been installed, tested, and approved.
  - 2. Furnishing and installation of the permanent water distribution pipe, valves and valve boxes, pipefittings, anchors, thrust blocks, required accessories and connections to existing water systems.
  - 3. Disinfections and testing of the systems.

**1.02 COORDINATION**

- 1. The Contractor shall coordinate with the Water Division of the Department of Public Services prior to performing any work. Notices shall be delivered to abutting properties informing them that their water system will be momentarily interrupted during the project and that a temporary distribution system will be installed until the permanent system is operational.

**1.03 SUBMITTALS**

- A. Shop Drawings:
  - 1. Submit Shop Drawings or descriptive literature, or both, showing dimensions, joints and other details of all materials to be furnished. Shop Drawings shall be submitted to the City for approval prior to ordering materials.
- B. As-Built Drawings:
  - 1. Submit 1 hard copy and an electronic (AutoCAD drawing or PDF) of As-Built Drawings upon completion and acceptance of work.
  - 2. As-Built Drawings shall be complete and shall indicate the true measurements and locations, horizontal and vertical, of all new construction. As-Built Drawings shall include a minimum of three ties to each gate valve box from fixed permanent objects. As-Built Drawings shall also contain any additional information required by the municipality, and shall be stamped with the seal of a Licensed Land Surveyor and Licensed Professional Engineer.

**1.04 DELIVERY, STORAGE AND HANDLING**

- A. Storage of pipe, fittings, valves and other water line appurtenances on the site shall be in accordance with the manufacturer's recommendations, subject to the approval of the City.
- B. Care shall be taken in loading, transporting and unloading to prevent injury to the pipe, fittings, valves and other water line appurtenances. Pipe or fittings shall not be dropped. All pipe or



fittings shall be examined before lying and no piece shall be installed which is found to be defective. Any damage to pipe and fitting coatings shall be repaired as directed by the City.

- C. Pipe, fittings, valves and other water system appurtenances which are defective from any cause, including damage caused by handling, and determined by the City as unrepairable, shall be unacceptable for installation and shall be replaced at no cost to the City.
- D. Pipe and all water system appurtenances that are damaged or disturbed through any cause prior to acceptance of the work shall be repaired, realigned or replaced as required by the City at no additional cost to the City.

## **PART 2 - PRODUCTS**

### **2.01 GENERAL**

- A. The Drawings are diagrammatic only and are intended to indicate the extent, but not all details, of the system, which shall be constructed. All materials are not shown; but the Contractor shall furnish and install all materials required for the complete system.

### **2.02 DUCTILE IRON PIPE**

- A. Ductile iron pipe shall be designed in accordance with ANSI A21.50/AWWA C150 and manufactured in accordance with ANSI A21.51/AWWA C151. Fittings shall be either mechanical joint or push-on joint complying with ANSI/AWWA C110/A21.10 or ANSI/AWWA C111/A21.11.
- B. Ductile iron pipe shall be Pressure Class 52 furnished in 18-foot or 20-foot nominal lengths.
- C. Restrained joint assemblies for mechanical fittings shall be EBAA Iron Sales MEGALUG or approved equivalent.
- D. Pipes shall be cement-mortar lined in accordance with ANSI A21.4/AWWA C104, except that the cement lining shall be double thickness.
- E. The exterior of all pipes shall be factory coated, with a double coat of asphaltic material conforming to ANSI A21.51/AWWA C151. The interior of all pipes shall have a seal coat of asphaltic material applied over the cement lining in accordance with ANSI A21.4/AWWA C104.

### **2.03 DUCTILE IRON PIPE FITTINGS**

- A. All ductile iron pipe fittings shall conform to ANSI/AWWA C110/A21.10 [gray and ductile iron standard fittings] or ANSI/AWWA C153/A21.53-84 [ductile iron compact fittings 3-inch through 16 inch].
- B. The type of fittings for pipe and valve connections shall be determined by the Contractor in accordance with the requirements shown on the Drawings prior to ordering the fittings.
- C. All fittings shall be cement-mortar lined and coated as specified for pipe.

### **2.04 DUCTILE IRON PIPE COUPLINGS**

- A. Couplings and accessories shall be pressure rated at least equal to that of the pipe. Couplings shall be Dresser Style 153, Smith Blair 441 style or approved equivalent. The couplings shall be provided with corrosion resistant nuts and bolts.
- B. Transition couplings for joining pipe of different diameters shall be Dresser Style 162 or approved equivalent. Coupling shall be provided with corrosion resistant nuts and bolts.
- C. After assembly, all exterior surfaces including the bolts and nuts shall be completely coated with two coats of a heavy-duty protective asphaltic coating. The interior of the coupling shall be epoxy-coated. Epoxy coating shall conform to AWWA C550.

## **2.05 DUCTILE IRON PIPE JOINTS**

- A. Joints shall be either push-on or mechanical joints conforming to ANSI A21.11/AWWA C111. Push-on and mechanical joints shall be provided with required gaskets, lubricants and accessories conforming to ANSI A21.11/AWWA C111.

## **2.06 COPPER PIPE**

- A. Services two inches or smaller shall be copper water tubing, Type K, for underground water service and shall be in accordance with ANSI/AWWA C800.
- B. Water service fittings including couplings and adapters, check valves and service saddles shall be in conformance with ANSI/AWWA C800, Underground Service Line Valves and Fittings.
- C. Joints in copper tubing shall be made with three part compression couplings or an approved equal.

## **2.07 VALVES**

- A. Gate valves shall be ductile iron, epoxy coated in conformance with AWWA C550, with O-ring seals, urethane coated wedge, stainless steel nuts and bolts, and anti-rotation seats to prevent t-bolts from turning. Valves with open right using a 2-inch operating nut with an arrow cast in the metal.
- B. Curb stops shall be ball type that seat by compression and shall be installed within the roadway public right-of-way. Curb stops shall be installed with a buffalo type telescoping (not screw type) box for access and shall be free draining. Curb stops shall be no less than 4.5-feet deep and no more than 5.5-feet deep.

## **2.08 VALVE BOXES**

- A. Each gate valve shall be provided with a valve box and cover.
- B. Valve boxes shall be of the buffalo-style, adjustable, telescoping, heavy-pattern type designed and constructed to prevent the direct transmission of traffic loads to the pipe or valve.
- C. Valve boxes shall be cast iron, asphalt coated with cast iron covers. The smallest inside diameter of the shaft shall not be less than 5-1/4 inches. The lower section of the box shall be designed to enclose the operating nut and stuffing box of the valve. Provisions shall be made for adjustment through at least 6-inches vertically while retainage lap of at least 4 inches between sections.
- D. Covers shall be close fitting and substantially dirt-tight. The top of the cover shall be flush with the top of the box rim. The word "WATER" shall be cast in the top surface of the cover.

## **2.09 HYDRANTS**

- A. Hydrants shall be Waterous Pacer WB-67.
- B. Hydrants shall have a 16-inch barrel with 4.5-feet to 6-feet burial depth and **open right**.
- C. All below grade hardware shall be stainless steel.
- D. Each hydrant shall be set vertically and be properly braced. Hydrants shall be installed with thrust blocks and retaining glands or retaining glands and rods. All hydrants shall be installed with a minimum of two (2) means of restraint. Care shall be taken to ensure that thrust block concrete does not plug the drain ports.

## **2.10 THRUST BLOCKS**

- A. Thrust restraints [cement concrete thrust blocks and/or clamps and tie rods] shall be installed in accordance with the details shown on the Drawings and as required by the City.

- B. The Contractor shall discuss with the City the method[s] to be used to restrain thrust prior to installing fittings and hydrant. Test pits may be required in areas of existing utilities to determine the exact location and dimensions of thrust restraints required.
- C. Concrete for thrust blocks shall have a minimum 28-day comprehensive strength of 3,000-psi.

#### **2.11 SERVICE BOXES**

- A. Service boxes shall be cast iron improved extension type with arch pattern base. Covers shall be held in place with bronze bolts and the word Water shall be cast into the top surface of the cover. Service box shafts shall have a minimum inside diameter of 2-1/2 inches. Service boxes shall be as manufactured by Mueller Corp. or approved equivalent.

### **PART 3 - EXECUTION**

#### **3.01 GENERAL**

- A. All water pipes, fittings, valves, hydrants and other appurtenances shall be installed at the locations as shown on the Drawings.
- B. The proposed horizontal location and vertical alignment may be altered to avoid conflicts with existing and proposed utilities, as approved by the City.
- C. All work shall be coordinated with the DPS Water Division prior to performing the work.

#### **3.02 LAYING DUCTILE IRON PIPE AND FITTINGS**

- A. Ductile iron pipe and fittings shall be installed in accordance with the requirements of ANSI/AWWA C600.
- B. Each length of pipe shall be laid with firm, full and even bearing throughout its entire length, in a trench prepared and maintained in accordance with Section 02200. The type of materials to be used in bedding and backfilling and method of placement shall conform to the requirements of Section 02200.
- C. All pipes shall be clean before lying. When lying is stopped for any reason, the open ends of the pipe shall be closed by watertight plugs or other approved means. If water is in the trench when work is resumed, the plug shall not be removed until the trench has been dewatered and all danger of water entering the pipe has been eliminated.
- D. Fittings, in addition to those shown on the Drawings, shall be provided if required to avoid utility conflicts.
- E. 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. Cut ends of pipe to be used with a push-on bell shall be beveled to conform to the manufactured spigot end. Cement lining shall be undamaged.
- F. Maximum allowable deflection for pipe laid without fittings shall not exceed the allowable amount established by the pipe manufacturer and shall not exceed those shown in AWWA C600.
- G. The pipe shall be laid with a minimum cover of five (5) feet below finished grade.

#### **3.03 JOINTING DUCTILE IRON PIPE [PUSH-ON TYPE]**

- A. Push-on joints shall be made in strict accordance with the manufacturer's instructions. A rubber gasket shall be inserted in the groove of the bell end of the pipe and the joint surface cleaned and lubricated using the pipe manufacturer's suggested methods and materials. The plain end of the pipe to be laid shall be inserted in alignment with the bell of the pipe to which it is to be jointed and pushed home with a jack or by other means. After joining the pipe, a metal

feeler gauge shall be used to make certain that the rubber gasket is correctly located and has not been twisted or otherwise displaced.

### 3.04 JOINTING MECHANICAL JOINT PIPE AND FITTINGS

- A. Mechanical joints shall be made in strict accordance with the manufacturer's instructions. Mechanical joints shall be made by first cleaning the surfaces against which the gaskets will come in contact with a wire brush. The gasket, bell, and spigot shall be lubricated by washing with soapy water just prior to assembling the joint. After the nuts have been made up finger tight, the bottom nut, then top and then diametrically opposite nuts shall be progressively tightened. Bolts shall be tightened to the torques listed:

Bolt Size [Inches]	Range of Torque [Feet-Pounds]
5/8	45 - 60
3/4	75 - 90
1 inch	85 - 100

- B. Under no conditions shall extension wrenches or a pipe over the handle of an ordinary ratchet wrench be used to secure greater leverage. After installation, a heavy bitumastic coating shall be applied to all bolts and nuts.
- C. Restraining device shall be ductile iron and shall have dimensions such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to ANSI/AWWA Z21.11 and ANSI/AWWA C153 latest revision.

### 3.05 CONCRETE THRUST BLOCKS

- A. Where pipes change horizontal and vertical direction, at hydrants, tees and other fittings, and wherever abnormal thrust forces may be developed, the Contractor shall construct thrust and anchor blocks as detailed on the Drawings. They shall be concrete, of minimum dimensions as detailed on the Drawings or of adequate additional size to suit actual conditions to withstand pressures anticipated, and shall be founded in undisturbed soil.
- B. Concrete for thrust blocks shall have a minimum 28-day's compressive strength of 3,000 psi.
- C. Fittings which do not use thrust blocks resting against natural occurring material with passive resistance pressure of 1,500 psf shall be installed with a restrained joint system
- D. Concrete shall not encase joints.

### 3.06 WATER/SEWER SEPARATION

- A. When a sewer pipe crosses above or below a water pipe, the following procedures shall be utilized. The Contractor shall comply with these following procedures:

1. Relation to Water Mains:

- a. *Horizontal Separation:* Whenever possible sewers shall be laid at a minimum at least 10 feet, horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of 10 feet, a sewer may be laid closer than 10 feet to a water main if:
- It is laid in a separate trench, or if
  - It is laid in the same trench with the water mains located at one side on a bench of undistributed earth, and if
  - If either case the elevations of the top (crown) of the sewer is at least 18 inches below the bottom (invert) of the water main.

- b. *Vertical Separation:* Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be varied to meet the above requirements, the water main shall be relocated to provide this separation or reconstructed with mechanical-joint pipe for a distance of 10 feet on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible.

- B. When it is impossible to obtain horizontal and/or vertical separation as stipulated above, both the water main and sewer shall be constructed of mechanical-joint cement lined ductile iron pipe or other equivalent based on water tightness and structural soundness. Both pipes shall be pressure tested by an approved method to assure water tightness or both pipes shall be encased in concrete.

**3.07 LAYING COPPER PIPE**

- A. Care shall be exercised in placing and lying of services to prevent kinks or sharp bends and contact with sharp stones or ledge, which would damage the pipe. At least 6 inches of sand shall be placed adjacent to, under, and above the pipe, and no stone larger than 2 inches shall be placed over the pipe until the depth of backfill above the pipe is in excess of 1 foot.

**3.08 GATE VALVES AND BOXES**

- A. Valves shall be set in firmly compacted and shaped soil. Where the soil in the trench subgrade is found to be soft, loose, freshly filled earth, unstable or unsuitable as a base, the unsuitable material shall be excavated to such additional depth and width as required. The excavated area shall be backfilled with gravel or crushed stone, compacted and shaped.
- B. Valve boxes shall be set centered and plumb over the operating nuts of all 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 vertical adjustment. Minimum overlap for lower, extension pieces shall be 4 inches.
- C. Boxes shall be adequately supported during backfilling to maintain vertical alignment.

**3.09 PRESSURE TESTING**

- A. Hydrostatic and leakage test shall be conducted in accordance with AWWA Standard C600, and as directed by the City. Testing shall be conducted by a certified independent water testing company.
- B. Conduct pipe tests after concrete thrust blocks have cured to the required 3000-psi strength. Fill pipe 24 hours prior to testing, and apply test pressure to stabilize system. Use only potable water.
- C. Prior to pressure testing, the entire pipe section shall be flushed to remove any rocks or debris, which may have inadvertently entered the pipe during construction.
- D. Once the pipe section has been filled at normal pressure and all entrapped air removed, the Contractor shall raise the pressure to 150 psi or two times the operating pressure (whichever is greater) by a special pressure pump, taking water from a small tank of proper dimensions for satisfactorily measuring the rate of pumpage into the pipe. This pressure shall be maintained for a minimum of 2 hours, during which time the line shall be checked for leaks. Measured rate of water leakage shall not exceed the allowable leakage listed below.
- E. Allowable leakage in gallons per hour, per 1,000 feet of exterior pipeline:

Test	
Pressure	Nominal Pipe Diameter [inches]

---

	4	6	8	10	12	16
150 psi	0.36	0.55	0.74	0.92	1.10	1.47

- F. Interior piping in vaults, buildings, etc. shall have zero leakage.
- G. Should leakage exceed this rate, the Contractor shall immediately locate the leak or leaks and repair them. Pipe will be accepted only when leakage is zero, or less than the allowable amount. Approval does not absolve the Contractor from responsibility if leaks develop later within the period of warranty.

**3.10 DISINFECTION**

- A. Before being placed in service, all new water pipe shall be chlorinated in accordance with ANSI/AWWA C651 Standard for Disinfecting Water Mains.
- B. The location of the chlorination and sampling points will be determined by the City in the field. Taps for chlorination and sampling shall be installed by the Contractor. The Contractor shall uncover and backfill the taps as required.
- C. The pipe section being disinfected shall be flushed to remove discolored water and sediment from the pipe. A 25-mg/l chlorine solution in approved dosages shall be inserted through a tap at one end while water is being withdrawn at the other end of the pipe section. The chlorine concentration in the water in the pipe shall be maintained at a minimum 25 mg/l available chlorine during filling. To assure that this concentration is maintained, the chlorine residual shall be measured at regular intervals in accordance with procedures described in Standard Methods and AWWA M12, Simplified Procedure for Water Examination [Section K].
- D. During the application of the chlorine, valves shall be manipulated to prevent the treatment dosage from flowing back into the pipe supplying the water. Chlorine application shall not cease until the entire pipe section is filled with chlorine solution. The chlorinated water shall be retained in the pipe for at least a twenty-four hour period. The treated water shall contain a chlorine residual throughout the length of the pipe section as indicated in AWWA C651.
- E. Following the chlorination period, all treated water shall be flushed from the pipe section and replaced with water from the distribution system. Prior to disposal of treated water the Contractor shall check with local authorities to determine if the discharge will cause damage to the receiving body or sewer and, if required, the Contractor shall neutralize the chlorinated water in accordance with Appendix B, AWWA C650. Bacteriological sampling and analysis of the replacement water may then be made by the Contractor in full accordance with AWWA Specification C651. A minimum of three samples shall be taken by the Contractor at locations directed by the City along the length of water pipe being chlorinated and sent to a State approved private laboratory for analyses. The Contractor shall re-chlorine if the samples show presence of coliform, and the pipe section shall not be placed in service until all of the repeat samples show no presence of coliform.
- F. Furnish two copies of a Certificate of Disinfection Report to the City.
- G. The Contractor shall pay all costs for all testing, flushing, chlorinating; laboratory analyses, sampling, water supply and municipal charges.

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END OF SECTION

**SECTION 02800**  
**PLANTING AND SEEDING**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. This Section specifies requirements for amending topsoil, providing and amending loam borrow, seeding and sodding for site landscape areas as well as the requirements for the provision and installation of trees, shrubs, and groundcover plants, and associated staking, fertilizing, backfill soil mix, maintenance, clean-up, and guarantee..
- B. The work includes:
  - 1. Furnishing, amending, spreading, and fine grading of topsoil and ¼” screened loam borrow
  - 2. Application of organic matter, lime and fertilizer
  - 3. Seeding, sodding and mulching
  - 4. Maintenance of seeded and sodded areas including watering to secure the establishment of an acceptable stand of grass.
  - 5. Tree, shrub, and groundcover planting.

**1.02 REFERENCE STANDARDS**

- A. References herein to any technical society, organization, group or body are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this section shall conform to the latest edition as applicable:

NAA – National Arborist Association

ASNS – American Standard for Nursery Stock prepared by the American Association of Nurserymen

MHDSSHB – Massachusetts Highway Department Standard Specifications for Highways and Bridges, latest edition

AOAC – Association of Official Agricultural Chemists

SPN – Standardized Plant Names as designated by the American Joint Committee on Horticultural Nomenclature

ANSI – American National Standard Institute

**1.03 SUBMITTALS**

- A. Submit a complete list of all materials proposed for use in this work, demonstrating complete conformance with the requirements specified.
- B. Approval shall not constitute final acceptance. The Owner reserves the right to reject, on or after delivery, any material that does not meet specifications.
  - 1. Submit seed mixtures for approval.
  - 2. Submit product information with mix ratios and amounts for hydro mulching to be utilized during hydroseeding operations for approval. Submit a certified statement as to the number of pounds and types of fertilizer, amounts and types of seed mixture and processed fiber per one (100) hundred gallons of water.



3. Submit manufacturers or vendor's certified analysis for soil amendments and fertilizer materials.
- C. Manufacturers Product Data
1. Submit material specifications and installation instructions where applicable attesting that the following materials meet the requirements specified:
    - a. Fertilizer
    - b. Seeds
    - c. Lime
    - d. Organic Matter
    - e. Bark Mulch
    - f. Erosion Control Fabric
- D. Plant Material Availability Confirmation: At least 60-days prior to anticipated planting, the Contractor shall submit a confirmation of availability for all plants on the list, accompanied by nursery sources. No substitutions shall be made without the written consent of the City. See Plant Tagging and Approval for additional requirements.
- E. Tagging Schedule: At least 30-days prior to planting, the Contractor shall submit a schedule for tagging material to the City. Once tagged, the Contractor shall provide written documentation to the City that trees have been paid for or a retainer has been placed on the plant material to ensure that the nursery will hold the plants until planting operations can begin. If, due to schedule delays, the planting will be delayed and the plant material needs to be released, the Contractor shall submit the request to release material in writing, for approval of the City. No plant material shall be released without approval in writing from the City.

#### **1.04 TESTING LABORATORY SERVICES**

- A. All topsoil obtained from on-site and/or loam borrow obtained from off-site used for work of this section shall be tested prior to being spread or mixed. All testing shall be done by an approved independent test laboratory or by an agriculture unit of the State University System in accordance with the most current "Standards" of the Association of Official Agricultural Chemists. A single lab shall perform all testing. Contractor shall provide required representative samples of material proposed for use to testing facility for analysis and recommended treatment. Separate tests are required for each loam borrow source. The Contractor shall bear any and all costs incurred in testing and analysis. Test reports shall also contain specific recommendations as to the exact types, times and rates of application of soil additives and fertilizers based upon the soil test results and type of material to be planted. A copy of all soil test reports shall be provided to the City. Materials shall be stockpiled and covered so as not to interfere with other work or with other subgrade or fill materials. Recommendations shall be followed during planting operations.
- B. Report shall have name of project, date of testing, and location of sample source. Analysis shall include:
1. Classification of soil by mechanical sieve with soil classification
  2. Percent sand, silt and clay particles
  3. Percent organic content
  4. Percent soluble salt index (1:2 soil-water ratio)
  5. Percent pH (1:1 soil-water ratio and buffer)

6. Percent Nitrogen (nitrate and ammonium), Phosphorous and Potash
7. Calcium, Aluminum, Magnesium, Manganese, Ferric Iron and Sulfur
8. Lead

Recommendation shall include appropriate amendment requirements including their composition and rate and means of application. Recommendations shall be provided for various types of planting such as sod, seeding, deciduous and ericaceous plant material.

- C. Test reports shall have been conducted within the three (3) months prior to planting operations. If planting operations extend for more than one season, Contractor shall provide additional testing reports at no additional cost to the City.
- D. Note that any and all materials and procedures with respect to soil additive and fertilizers, contained herein, are approximate and that all soil additives will be adjusted to comply with test reports and with the recommendations of the City.

#### **1.05 QUALITY ASSURANCE**

- A. Conduct all planting operations by experienced personnel under competent supervision. Education, experience and/or certification or license by appropriate organization may be reviewed to evaluate competence. The Contractor must show previous evidence of having successfully installed and maintained landscape projects of similar scope to the subject project with regard to quantities of plants involved, sizes of plants involved, anticipated cost, complexity and a minimum of five (5) years experience on projects similar to this one.
- B. Loam borrow and topsoil (if available) shall be provided and spread by the landscape contractor.
- C. Source Quality Control:
  1. Invasive plant material: Source of loam borrow and the surrounding area shall be certified free of invasive plants, especially knotweed, by a licensed plant scientist or horticulturalist.
  2. Analysis and standards: Package standard products with manufacturers certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.
- D. Work shall be coordinated with all other trades on site.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver material to the site in original unopened packages, showing weight, manufacturer's name and guaranteed analysis.
- B. Store materials in a manner that their effectiveness and usability will not be diminished or destroyed. Materials shall be uniform in composition, dry, unfrozen and free flowing. Any material which has become caked or otherwise damaged or does not meet specified requirements will be rejected.
- C. Deliver plant materials to site in healthy and undamaged condition. Tree trunks shall be protected during shipping by a heavy walled cardboard sleeve or other suitable material. Plants shall either be shipped in enclosed trucks or all surfaces, leaves and branches shall be wrapped to prevent damage and desiccation.
- D. Rootballs shall be moist upon arrival and shall be kept moist until installation. All balled and burlapped plants that cannot be planted at once must be heeled in by setting them in the ground, covering the rootballs with soil, and watering them adequately.

- E. All plants on-site shall meet the requirements specified on the planting plan. Any plant material on site which does not meet the criteria specified shall be replaced with approved plants at the Contractor's expense. Prior approval of plants at the source shall not alter the right of inspection or rejection at the site or during the progress of the work.
- F. Only move plant material with solid balls wrapped in burlap or synthetic wrapping or in wire baskets.
- G. Deliver plant materials immediately prior to placement. Keep plant materials moist. As required by temperature or wind conditions, apply anti-desiccant emulsion to prevent drying out of plant materials. If installation is delayed more than six (6) hours after delivery, store plants in shade and cover rootballs with mulch. Plants shall not be stored on pavement. Plants shall be watered daily.
- H. Each root control barrier roll shall be wrapped with a protective bag recommended by the manufacturer and placed in a container that will protect the product from damage due to shipment, water, sunlight, and contaminants and to prevent premature release of herbicide. The protective wrapping shall be maintained during periods of shipment and storage.
- I. During storage, root control barrier product shall be elevated off the ground and out of direct sunlight. It shall remain sealed in protective bag inside shipping container at a temperature of not more than 110°F.

#### **1.07 PROJECT CONDITIONS**

- A. The Contractor shall be solely responsible for judging the full extent of work requirements involved. All areas to be seeded shall be inspected by the Contractor before starting work and any defects, such as incorrect grading, etc., shall be reported to the City prior to beginning this work. The commencement of work by the Contractor shall indicate his acceptance of the areas to be planted, and he shall assume full responsibility for the work of this Section.

#### **1.08 GUARANTEE**

- A. The contractor shall warranty trees, shrubs and groundcover for a period of two (2) years after date of issuance of the "Substantial Completion", against defects including dead and unsatisfactory growth, except for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond Landscape Installer's control.
- B. Replace plant materials found dead or not in a healthy growing condition. Plants shall exhibit healthy branching and foliage, and be free of insect or disease damage. Replace plants during normal planting season.
- C. Replacements: Plant materials of same size and species, with a new warranty commencing on date of replacement. City shall be given a five (5) day notice of installation of replacement plants to allow inspection of plant material.
- D. Subject to all replacement materials and workmanship to requirements of this section.

#### **1.09 INSPECTION FOR ACCEPTANCE**

- A. After the minimum ninety (90) day maintenance period, the Contractor shall request the City, in writing, for an inspection to determine whether the plant material is acceptable. If the plant material and workmanship are acceptable, written notice will be given by the City to the Contractor stating that the guarantee period begins from the date of the Certificate of Acceptance.
- B. If a substantial number of plants are sickly and dead at the time of inspection, acceptance will not be granted, and the Contractor's responsibility for maintenance of all the plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly

removed from the project. Replacements shall conform in all respects to the specification for new plants and shall be planted in the same manner.

## PART 2 - PRODUCTS

### 2.01 SOILS

- A. Utilize previously stripped and stockpiled topsoil prior to obtaining additional loam borrow from off-site sources. If quantity of stockpiled topsoil is insufficient, provide additional loam borrow as required to complete the landscape work at no additional cost to the City.
1. Topsoil, which has been stockpiled on the site, may be used provided it can be made to comply with these Specifications herein for loam borrow/planting soil.
  2. Provide a minimum depth of six (6) inches of planting soil in all areas indicated for seeding.
  3. Provide a minimum depth of four (4) inches of planting soil in all areas indicated for sodding.
  4. Provide twelve (12) inches minimum depth for planting beds.
- B. The Contractor shall provide ¼-inch screened loam borrow, which shall be a "loam", "sandy loam" or "fine sandy loam" as determined by mechanical analysis and based on the "USDA Textural Classification". It shall conform to the following mechanical analysis:

<u>Textural Class</u>	<u>% of Total Weight</u>	<u>Average %</u>
Sand (.05-2.0mm dia. range)	45 to 75	60
Silt (.002-.05mm dia. range)	15 to 35	25
Clay (>0.002mm dia. range)	5 to 25	15

- C. Maximum grain size shall be one-quarter (1/4) inch largest dimension. The maximum retained on the one-quarter inch sieve shall be 20 percent by weight of the total sample. Test shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.
- D. Loam borrow shall consist of natural topsoil, free from subsoil, obtained from an area that has never been stripped. The location of the source of loam shall be submitted for approval. It shall be removed to a depth of one (1) foot or less if subsoil is encountered. Planting soil shall be of uniform quality screened free of hard clods, stiff clay, hardpan, sods, partially disintegrated stone, lime, cement, ashes, slag, concrete, tar residues, tarred paper, boards, chips, glass, sticks, or any other undesirable material.
- E. Loam borrow shall be screened loam and shall be free of plants and their roots, debris, and other debris and other extraneous matter. It shall be uncontaminated by salt, water, foreign matter and substances harmful to plant growth. The electrical conductivity (EC2) of a 1:2 soil-water suspension shall be equal to or less than 1.0 milliohms/cm. (test material passing #4 sieve).
- F. Loam borrow shall have an acidity range of pH 5.5 to pH 7.0 and shall contain not less than 7% nor more than 10% (20% for planting beds) organic matter as determined by the loss on ignition of oven-dried samples. Test samples shall be oven-dried to a constant weight at a temperature of 230°F ± 9°. To adjust organic matter content, the soil may be amended, prior to site delivery, by the addition of composted humus. Use of organic amendments is acceptable only if random soil sampling indicates thorough incorporation.
- G. All soil provided from off-site sources shall be brought to the site meeting all specification requirements. There shall be no mixing or amending of imported soil on site. No loam shall be

spread prior to screening and review and approval by the City. The loam borrow must not be handled or moved when in a wet or frozen condition.

- H. To adjust organic matter content, the soil may be amended, prior to delivery, by the addition of composted leaf mold or other acceptable organic matter. Use of organic amendments is accepted only if random soil sampling indicates a thorough incorporation of these materials.
- I. If limestone is required to amend the screened loam to bring it within pH range, no more than 200-pounds of limestone per 1,000-square feet of loam may be incorporated into the soil, (or 50-pounds of limestone per 1,000-square feet if applied by surface application) within a single season.  
  
Prior to placing loam for lawns, pH shall be adjusted by means of soil additives to not less than 6.0 nor more than 6.8, as recommended by soils tests.
- J. Commercial fertilizer, limestone, humus, organic matter or other additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as directed by the City.
- K. The Contractor shall notify the City once the approved loam/planting soil has been delivered to the site. The City may take samples from each of the planting soil sources and will deliver the samples to the testing laboratory at the City's expense.
- L. Should the samples not meet the specified requirements, the Contractor will be responsible for amendment of the soils to meet the specifications. The Contractor shall then notify the City for sampling of the soil sources for testing at the Contractor's expense. This process will be repeated and must be completed and soils approved prior to any seeding, sodding or plant installation.

## **2.02 SOIL CONDITIONING MATERIALS**

- A. Lime - shall be an approved agricultural limestone containing no less than 50-percent total carbonates, and 25 percent total magnesium with a neutralizing value of at least 100-percent. The material shall be ground to such a fineness that 40-percent will pass through a No. 100 U.S. Standard Sieve, and 98 percent will pass through a No. 20 U.S. Standard Sieve. The lime shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any lime that becomes caked or otherwise damaged (making it unsuitable for use) will be rejected.
- B. Fertilizer - shall be a complete, organic product complying with State and Federal Fertilizer Laws. The fertilizer shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis, and submitted to the City for approval. Fertilizer shall contain the following minimum percentage of available plant food by weight: 5-percent nitrogen, 10-percent phosphorus, 5-percent potash, in which 75-percent of the nitrogenous elements shall be derived from organic sources. Exact percentages of fertilizer may vary in accordance with the soil test report. Any fertilizer that becomes caked or otherwise damaged (making it unsuitable for use) will be rejected.
- C. Humus – shall be natural humus, reed peat or sedge peat. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. According to the methods of testing of A.O.A.C., latest edition, the acidity range shall be approximately 5.5 pH to 7.5 pH and the organic matter shall be not less than 85% as determined by loss on ignition. The minimum water absorbing ability shall be 200% by weight on an oven-dry basis.
- D. Manure - shall be well-rotted, unbleached stable manure not less than eight months and not more than two years old. It shall be free from sawdust, shavings or refuse of any kind and shall not contain over twenty-five (25) percent straw. The Contractor shall furnish information

as to the kind of disinfectant or chemicals, if any, that may have been used in storage of the manure.

- E. Sulfur - shall be in elemental granular form, powder shall not be used. Aluminum sulfate shall not be used.
- F. Bonemeal - shall be of commercial quality, raw, finely ground; with 4 percent nitrogen and 20-percent phosphoric acid.
- G. Superphosphate - shall be composed of finely ground phosphate rock, as commonly used for agricultural purposes, and containing not less than 20-percent available phosphoric acid. The superphosphate shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis and submitted to the City for approval. Any superphosphate that becomes caked or otherwise damaged (making it unsuitable for use) will be rejected.

**2.03 WATER**

- A. Water shall be furnished by the Contractor, suitable for irrigation, and free from ingredients harmful to plant life. Hoses and other watering equipment required for the work shall be furnished by the Contractor.

**2.04 SEED**

- A. Lawn Seed: Seed species shall be improved varieties, "named" species, and shall be provided to the City for review and approval. Seed shall be fresh, clean and selected from the previous year's crop; weed seed content not to exceed 1 percent; complying with applicable Federal and State seed laws; furnished and delivered premixed in unopened containers in the following proportions:

	Percent By Weight	Percent Germination (Min.)	Percent Purity (Min.)
1. For Lawns:			
Fylking Kentucky Bluegrass	25%	75%	99%
Baron Kentucky Bluegrass	20%	75%	90%
Jamestown Red Fescue	30%	85%	90%
Annual Ryegrass	10%	90%	90%
Manhattan Perennial Ryegrass	15%	90%	90%
2. For Temporary Lawns:			
Annual Rye	60%	90%	95%
Perennial Rye	40%	90%	95%

- B. All seed shall comply with State and Federal seed laws. Submit manufacturers Certificate of Compliance. Seed, which has become wet, moldy or otherwise damaged will not be acceptable.
- C. Seed may be mixed by an approved method on the site or may be mixed by a dealer. If the seed is mixed on site, each variety shall be delivered in the original containers, which shall bear the dealers guaranteed statement of the composition of the mixture.

**2.05 SOD**

- A. Composition: Nursery grown sod on agricultural land cultivated specifically for sod; composed of grass mixtures recommended by the New England Sod Producers Association, as follows:

<u>Grass Species</u>	<u>Proportion of Seed by Weight</u>
:	
Kentucky Bluegrass (American, Touchdown Challenger 3 cultivar minimum)	50-100%
Red Fescue	0-50%

- B. Characteristics: Sod shall be well-rooted turf, free from weeds, insect pests, and disease. Species shall be improved varieties or "named" species and shall be provided to the City for review and approval. It shall be machine-cut to a uniform soil thickness of 3/4-inch plus or minus (excluding thatch layer and top growth), and to industry standard length and widths. Sod shall be harvested and replanted within 36-hours. Soil on sod pads shall be kept moist at all times.

**2.06 HYDROMULCH**

- A. 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. Fiber shall not be produced from recycled material such as sawdust, paper, or cardboard.
  2. Moisture content shall not exceed 10-percent, plus or minus 3-percent, as defined by the pulp and paper industry standards. Fiber shall have a waterholding capacity of not less than 900-grams of water per 100-grams fiber.
  3. The mulch shall disperse into a uniform slurry when mixed with water. It shall be nontoxic to plant life or animal life.
  4. The mulch shall contain a non-petroleum based tackifier and a green dye for visual monitoring during application, both noninjurious to plant growth.

**2.07 HYDROSEED MIX**

- A. The Contractor shall submit a certified statement as to number of pounds of fertilizer, amounts and types of grass seed, and processed fiber, per 100-gallons of water for review by the City.
1. No hydroseed mixing shall be allowed for the Upland Seed Mix.

**2.08 PLANT MATERIAL**

- A. The Contractor shall furnish and plant all plants shown on the drawings. Plants shall conform to measurements and species designated on plant list and standards as established in American Standard for Nursery Stock ANSI Z60.1-1996 or as most recently amended. All plants shall be typical of their species or variety in growth habit. Plant sizes, habit, rootballs, and containers shall be in accordance with the American Standard for Nursery Stock (ASNS, latest edition), Standards of the American Association of Nurserymen (AAN) as a minimum requirement for acceptance. No substitutions will be accepted, without prior approval of the City. Such requests shall be made at least one (1) month prior to nursery inspections. Requests shall list at least five (5) major nursery sources contacted for confirmation of unavailability.
- B. All plant material shall be nursery grown and shall be shapely, well-grown, healthy, sound and free of disease, insect pests, eggs or larvae, and shall have a well developed root system. All

plants shall be typical of their species or variety and shall have a normal habit of growth. They shall conform to the trade classification of "heavy specimen".

- C. All trees and shrubs shall be freshly dug; no heeled-in plants and no plants from cold storage will be accepted. Plants shall have been transplanted or root pruned at least once in the last 3 years. All plants shall be hardy under climatic conditions similar to those in the locality of the project. All plant materials shall be properly identified by name on legible, weatherproof labels securely attached thereto.
- D. Deciduous Trees: Provide trees of height and caliper scheduled or shown and with branching configuration recommended by ANSI Z60.1 for type and species required. Provide single stem trees except where special forms are shown or listed.
  - 1. The height of trees (measured from the crown of the roots to the tip of the top branch) shall not be less than the minimum size designated. Take caliper measurement six inches above ground level up to and including four-inch caliper size and twelve inches above the ground for larger sizes. The trunk of each tree shall be a single trunk growing from a single unmutilated crown of roots. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sunscald, frost cracks, or wounds resulting from abrasions, fire and other causes. No pruning wounds shall be present having a diameter exceeding two inches and such wounds must show vigorous bark on all edges. Plants shall not be pruned prior to delivery.
- E. Deciduous Shrubs: Provide shrubs of the height shown or listed and with not less than minimum number of canes required by ANSI Z60.1 for type and height of shrub required.
  - 1. Shrubs shall meet the requirements for spread or height specified in the "Plant Schedule". The measurements for height shall be taken from the ground level to the average height of the shrub and not to the longest branch. The thickness of each shrub shall correspond to the trade classification "No. 1." Single stemmed or thin plants will not be accepted. The side branches must be generous, well twigged, and the plant as a whole well branched to the ground. The plants must be in a moist vigorous condition, free from dead wood, bruises, or other root or branch injuries. Plants shall not be pruned prior to delivery.
- F. Coniferous and Broad leafed Evergreens: Provide evergreens of sizes shown or listed. Dimensions indicate minimum spread for spreading and semi-spreading type evergreens and height for other types, such as globe, dwarf, cone, pyramidal, broad upright, and columnar. Provide normal quality evergreens with well-balanced form complying with requirements for other size relationships to the primary dimension shown.
- G. Ground cover plants, vines, and perennials shall be of size, age and/or condition listed in the "Plant Schedule". Plants shall be healthy, free of insects and diseases. Ground cover plants shall be potted. Perennials shall be container-grown. Vines shall be balled and burlapped or container-grown. Provide plants established and well rooted in removable containers or integral peat pots and with not less than minimum number and length of runners required by ANSI Z60.1 for the pot size shown or listed.
- H. Container-grown stock shall have been in a container long enough for the root system to have developed sufficiently to hold its soil together firm and whole.
- I. Container grown plants shall have sufficient roots to hold planting mix intact after removal from containers without being root-bound.
- J. Plants that meet the measurements specified, but do not possess a normal balance between height and spread shall be rejected.
- K. Plants shall not be pruned before delivery. Trees which have a damaged or crooked leader, or multiple leaders, will be rejected. Trees with abrasion of the bark, sunscalds, disfiguring knots or fresh cuts of limbs over 1.25-inches which have not completed calloused, will be rejected.



- L. Certificates of inspection shall accompany the invoice for each shipment of plants as may be required by laws for transportation. File certificates with the construction manager prior to unloading of the material. Inspection at place of growth does not preclude rejection of the plants at the site.
- M. Plant material which, under special conditions, is approved in advance by City to be planted after the specified seasons for planting shall be dug during the normal season for digging of the particular plant material and be stored and maintained in good health until planting. The Contractor shall assume all costs for maintaining plant material while it is being stored.
- N. Plant List: If there is any discrepancy between quantities shown on the Plant List and work shown on the drawings, the Landscape Contractor shall supply the plants necessary to complete the work as intended on the drawings. Where the size of a plant on the Plant List is a variation between a minimum and maximum dimension, the sizes of the plants furnished will be equal to the average of the two dimensions. Where a single dimension is given, this dimension represents the minimum size of the plants to be furnished.

## **2.09 MULCH**

- A. Native shredded hemlock bark, 100-percent organic, aged at least one (1) year, having a moisture content not exceeding 40-percent, free of any disease, insects, and shall pass a 1-inch square mesh and be retained on a 1/8-inch square mesh. Mulch shall not contain pieces more than 1/4-inch thick or an excess of fine particles. Mulch shall be dark brown in color.

## **2.10 PLANT BACKFILL MIXTURE**

- A. Topsoil/loam, organic material and bonemeal for plant backfill for both planting beds and individual plants shall be thoroughly premixed in the proportions of one (1) part of organic material with seven (7) parts of loam together with ten (10) pounds of bonemeal per cubic yard of mixture or as directed by the City.
- B. The plant backfill mixture shall have an acidity range of between 5.5 pH and 7.0 pH.

## **PART 3 - EXECUTION**

### **3.01 PLANTING DATES**

- A. Plant within the following dates:
  - 1. Evergreen trees and shrubs
    - Spring: April 15 – June 1
    - Fall: September 1 – October 15
  - 2. Deciduous trees and shrubs:
    - Spring: April 1 – June 15
    - Fall: September 15 – November 1
  - 3. Planting shall be prohibited in frozen or muddy ground.
- B. Special conditions may warrant a variance in the above dates. Contractor shall notify the City of the conditions and the proposed variance. Permission will be given if the variance is warranted.
- C. Approximate planting dates schedule shall be furnished by Contractor to the City for approval. Material planted out-of-season shall be given extra care and attention by the Contractor. Out-of-season planting shall be entirely at the Contractor's risk.

- D. Contractor shall schedule tree selection and digging operations so as to comply with nursery industry recognition of "Spring Dig Only"/"Fall Hazard" plant materials. No substitutions of plant materials will be allowed for fall planting based on unavailability due to the "Spring Dig Only"/"Fall Hazard" restrictions. Contractor shall have selected and had the material dug during the previous spring or shall obtain material from a nursery skilled at fall digging.

### **3.02 PREPARATION OF PLANTING SOIL**

- A. Landscape Contractor shall be responsible for the amending and spreading of all topsoil and loam borrow.
- B. Mix specified soil amendments and fertilizers with topsoil and/or loam borrow at rates specified by testing agency and City. Delay mixing of fertilizer if seeding will not follow placing of planting soil within a five (5) days period.
- C. Maintain at all times during the planting operations one or more stockpiles of approved planting soil.

### **3.03 FINE GRADING WITH PLANTING SOIL**

- A. After all areas to receive planting soil have been brought to subgrade, and immediately prior to placing and spreading the planting soil (amended topsoil and amended loam borrow) the subgrade shall be loosened by disking or rototilling to a depth of at least three inches to permit bonding of the planting soil to the subsoil unless there are trees in the area. If large trees are present, review locations of disking/rototilling with City to reduce impact on tree roots. Remove all stones in the subgrade greater than one (1) inch in diameter and all debris or rubbish. Such material shall be removed from the site, at no additional cost to the City.
- B. Screened loam borrow or screened topsoil from stockpile shall be placed and spread over approved areas to a depth sufficiently greater than six inches so that after natural settlement by watering and light rolling, the completed work will conform to the lines, grades, and elevations indicated. Supply additional loam, after testing and approval as may be needed, to provide the specified depths and finished grades under the Contract without additional cost to the City.
- C. Disturbed areas outside the limit of seeding shall be spread with six (6) inches of screened loam or screened topsoil to the finished grade as specified herein above.
- D. No subsoil or planting soil shall be handled in any way if it is in a wet or frozen condition.
- E. Sufficient grade stakes be set for checking the finished grades. Stakes must be set in the bottom of swales and at top of slopes. Grades shall be established which are accurate to one tenth of a foot either way. Connect contours and spot elevations with an even slope.
- F. After loam/topsoil has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. All large stiff clods, lumps, brush, glass, roots, stumps, litter and other foreign matter, and stones over one quarter inch in diameter shall be removed from the loam. Loam/topsoil shall also be free of smaller stones in excessive quantities as determined by the City.
- G. Loam/topsoil shall be watered sufficiently to provide for settlement of newly placed soil. After soils dry, a second watering shall be provided. Additional soil, if needed due to settlement, shall be added and watered in two (2) times until the settled soil meets proposed finish grade.
- H. The entire surface shall then be rolled with a hand roller weighing not more than one hundred (100) pounds per foot of width. During the rolling, all depressions caused by settlements or rolling shall be filled with additional planting soil and the surface shall be regraded and rolled until it presents a smooth and even finish to the required grade.
- I. Contractor shall obtain City's written approval of fine grading and bed preparation before doing any seeding or sodding.

### **3.04 SEED AND SOD BED PREPARATION**

- A. Grade all lawn areas to finish grades as indicated on the Drawings. When no grades are shown, areas shall have a smooth and continual grade between existing or fixed controls and elevations shown on Drawings. Roll, scarify, and rake, as required, to obtain uniform, even lawn surfaces. All lawn areas shall slope to drain. Finish grades shall be approved by the City.
- B. If no new topsoil is required, thoroughly loosen soil in areas to be seeded or sodded to a minimum depth of 6-inches with approved power or hand equipment. If large trees are present, review locations of disking/rototilling with City to reduce impact on tree roots. Remove rocks, debris, clods and other undesirable substances, and maintain grading and drainage patterns.
- C. When topsoil is required, place topsoil on previously scarified subsoil to a minimum depth of 6-inches. Subsoil shall be cleaned of debris and stones larger than 2-inches prior to topsoil spreading.
- D. Apply fertilizer, organic matter, superphosphate, lime, and any other amendments required at rates recommended by the testing agency and approved by the City. Thoroughly and evenly incorporate amendments into the soil to a depth of 3-inches, by discing or other approved methods. In areas inaccessible to power equipment, amendments shall be incorporated into the soil by manual methods. At existing trees, the depth shall be adjusted to avoid disturbance of the roots, as agreed upon with the City.
- E. Seeding and sodding shall be done immediately after final grading, provided the bed has remained in a good, friable condition, and has not become muddy or compacted. Any undulations or irregularities in the surface resulting from the addition of amendments tilling, or other causes, shall be regraded prior to seeding and sodding. The surface shall be free of stones, cleared of all trash, debris, roots, brush, wire, grade stakes and other objects that would interfere with establishment of grass and grass maintenance operations.

### **3.05 HYDROSEED BED PREPARATION**

- A. Prepare seed bed for hydroseeding the same as for seeding and sodding, but do not incorporate fertilizer into the top 3-inches of topsoil.
- B. Hydroseeding shall be applied with a spray machine designed for this purpose and approved by the City.

### **3.06 SEEDING**

- A. All areas indicated on the plan shall be loamed and seeded only after written approval of the City of bed preparation. All disturbed areas outside the limit of seeding shall be seeded. Seeding shall be done between April 1 and June 1, or August 15 and October 15, except as otherwise authorized in writing by the City.
- B. All disturbed areas not covered by buildings, paving, or otherwise developed, shall be seeded.

### **3.07 MANUAL SEEDING**

- A. Mechanical and/or Hand seeding operations shall be done in two directions at right angles to each other. Sow the seed with an approved seeding device at the specified rate. If covering and rolling is not properly accomplished by the seeding machine, the seed shall be lightly raked into the ground, after which the ground shall be rolled with a one (100) hundred pound water ballast roller and thoroughly and evenly watered with a fine spray to penetrate the soil to a depth of at least two (2) inches.
- B. In areas having slopes 3:1 or steeper, and in drainage swales, the Contractor shall carry out a separate overseeding operation immediately after sowing the specified seed mix. The overseeding shall be sown at the rate of 3-pounds per 1,000-square feet. Seeded areas

requiring additional erosion control, shall be covered with an approved, biodegradable erosion control fabric and the fabric firmly anchored.

### **3.08 HYDROSEEDING**

- A. Designated areas shall be hydroseeded only after written approval of the finished grading by the City.
- B. Hydroseeding Operations: All work shall accomplished using an approved spraying machine specifically designed for this work. Fertilizer amounts shall reflect recommendations indicated in the "Soil Analysis" or as directed by the City. A mobile tank with a capacity of at least 500-gallons shall be filled with water, and the required amounts of seed, wood cellulose mulch and fertilizer. The slurry shall be thoroughly mixed by means of positive agitation in the tank. The slurry shall be applied by means of a centrifugal pump using the turret or hose application technique from the mobile tank. The hose or turret shall be equipped with a seeding nozzle of a proper design to ensure even distribution of the solution over the area to be seeded and shall be operated by a person thoroughly familiar with this type of seeding operation.
- C. Seed shall be added to the hydroseeding slurry at the rate recommended by the manufacturer and approved by the City.
- D. Wood cellulose fiber mulch shall be added to the hydroseeding slurry at the rate of two tons per acre.

### **3.09 SODDING**

- A. Before sod is laid, and after all grading is complete, the loam bed shall be lightly raked with a fine toothed harrow or hand rake. The loam bed shall be moist, but not wet, prior to laying the sod. Sod shall not be laid on soil that is dry and powdery.
- B. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to, and tightly against, each other. Sod shall be placed so that edge strips are full width. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to ensure that the sod is not stretched or overlapped, and that all joints are butted tight to prevent voids. The Contractor shall rake sufficient screened loam into the sod to fill all small voids. All large voids shall be filled with sod plugs.
- C. Sod shall be laid with staggered joints and secured by pegging on slopes greater than 25%.
- D. Sod shall be placed from April 1 to June 1 and August 15 to October 15, provided that the ground is not frozen.
- E. Sod shall be harvested, delivered, and transplanted onto the site within a period of 36 hours.
- F. Sod shall be watered immediately, during and after installation, to a sufficient depth to thoroughly wet the underside of the new sod and the soil immediately below. The Contractor shall have adequate water available on the site prior to, and during, installation of the sod.

### **3.10 PLANTING**

- A. Remove all wrappings so that the plant canopy and stems and trunks may be reviewed for damage or disease.
- B. Place trees in the center of the holes. Set the trunk flare of the plant 2-3-inches above finish grade.
- C. Cut and remove all ropes, wires, burlap, synthetic wrap, and wire baskets completely from root balls and dispose of offsite. City's representative shall be shown removed materials prior to backfilling and disposal off site.

- D. Set plant plumb, turned to face best side of plant forward, and brace firmly in position. Loosen surface soil of root ball and comb out any exposed roots. Prune all broken or girdling roots.
- E. Use planting mix to backfill plant pits. Planting mix shall be a minimum of 12-inches deep within planting/shrub bed areas. See Drawings for specific depths. Place planting mix in layers not to exceed 8-inches. When plant pits have been backfilled approximately two-thirds full, water thoroughly before installing remainder of the planting soil to eliminate air pockets. Add remainder of backfill. Using the end of a shovel handle, push handle into soil at a 45-degree angle down into backfill to provide water access to eliminate air pockets. Do not use foot to compact soil. Holes should be provided around circumference of root ball. Add water until soil is thoroughly saturated.
- F. Score or butterfly cut rootball of all container grown plants prior to planting.
- G. Form 3--inch deep soil saucers around tree pits and shrub beds.
- H. Water all plants immediately after planting. All plants shall be flooded with water twice within first 24-hours of planting.
- I. Mulch all pits and beds to depth indicated on details immediately after first watering. Depth shall be measured after settlement. No mulch shall be applied prior to first watering of plants.
- J. Plants shall not be wrapped after installation. A shade barrier of plastic mesh shall be placed at the base of all trees whose flares were covered with soil to prevent sunscald on the newly exposed bark. Mesh shall be at 12-inches in height and shall not come into contact with the truck.

### **3.11 TREE SUPPORT**

- A. Firmly stake or guy all trees immediately after planting. Plants shall stand plumb after staking or guying. Stakes shall be plumb and neat, and installed in accordance with the details.
- B. Support plants upright in position by guy arbor tape and stakes.
- C. Upright stakes shall penetrate at least 18-inches below bottom of backfilled excavation and extend at least 72-inches above grade.

### **3.12 PRUNING**

- A. Each tree and shrub shall be pruned by a Massachusetts Certified Arborist in accordance with American Nurserymen Association standards to preserve the natural character of the plant and in a manner to meet its particular requirements in the landscape.
- B. Pruning and trimming shall include the following:
  - 1. Remove all dead wood, suckers and broken or badly bruised branches. Never cut a leader.
  - 2. Prune to preserve natural character of plant.
  - 3. Use only clean, sharp tools.
  - 4. Disinfect tools between each plant.
    - a. Wound shall not be painted.
    - b. Apply anti-desiccant to foliage if conditions warrant as deemed appropriate by City.
- C. Time of Pruning:
  - 1. At installation: pruning shall consist of removing dead branches, and broken or badly bruised branches.

- D. Near end of Guarantee Period: prune as noted in A, above and to preserve natural character of plant, remove rubbing branches etc.

**3.13 MAINTENANCE AND PROTECTION (SEEDING AND SODDING)**

- A. Maintenance shall begin immediately after an area is seeded or sodded and shall continue until final acceptance, but in no case, less than the following period.
  - 1. Sixty (60) days after substantial completion of seeding and thirty (30) days for sodding.
    - a. Maintenance may continue until the next growing season if in the opinion of the City the season enters winter dormancy and no maintenance should continue.
    - b. Seeded lawns shall be maintained until all areas have a close stand of grass which has received a minimum of three mowings, has no bare spots greater than two inches in diameter, and at least 90% of the grass established shall be permanent grass species.
- B. Maintenance shall include reseeding, mowing, watering, weeding, edging, fertilizing, replacement of dead sod, disease and insect pest control, repair of all erosion damage (including replacement of soil), and any other procedures consistent with good horticultural practice, required to ensure normal, vigorous, and healthy growth. Maintenance shall also include all temporary protection fences, barriers, signs, and all other work incidental to proper maintenance.
- C. Watering of Seeded Areas:
  - 1. The seeded and sodded areas shall be maintained in a continuous moist condition, satisfactory for good germination and growth of grass until acceptance. The Contractor shall provide all labor and arrange for all watering necessary to establish an acceptable lawn. In the absence of an adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of at least four (4) inches. Watering shall be done in a manner which will provide uniform coverage, prevent erosion due to application of excessive quantities over small areas, and prevent damage to the finished surface by the watering equipment. The Contractor shall furnish sufficient watering equipment to apply one complete coverage to the seeded areas in an eight (8) hour period.
- D. Protection
  - 1. Seeded areas shall be protected by a three-foot high barrier constructed of two-by-four stakes or iron pipes set eighteen inches in the ground at ten-foot intervals and connected by No. 10 wire. Flags of white cloth shall be secured to the wire at center points between stakes.
  - 2. Barriers must be raised immediately after seeding and shall be maintained until acceptance.
- E. Reseeding: After the grass in seeded areas has appeared, all areas and parts of areas which, in the opinion of the City, fail to show a uniform stand of grass, for any reason whatsoever, shall be reseeded and such areas and parts of areas shall be seeded repeatedly until all areas are covered with a satisfactory growth of grass. Reseeding together with necessary grading, fertilizing, and trimming shall be done at the expense of the Contractor.
- F. Resodding Areas: All areas and parts of areas which, in the opinion of the City, fail to show a uniform stand of grass, for any reason whatsoever, shall be resodded and such areas and parts of areas shall sodded repeatedly until all areas are covered with a satisfactory growth of grass. Minimum size of sod for resodding shall be two feet square (2'x2'). Resodding together with necessary grading, fertilizing, and trimming shall be done at the expense of the Contractor.

- G. Mowing:
  - 1. Seeded Areas: The Contractor shall keep seeded areas mowed until written acceptance of the seeding by the City by cutting to a height of two (2) inches when growth reaches three (3) inches or as directed by the City.
  - 2. Mowing shall include removal of clippings.
  - 3. The area with Upland Seed Mix shall not be mowed during the maintenance period unless directed otherwise by the City.
- H. Fertilizing: A second application of fertilizer, as specified herein, shall be applied after one (1) season of growth of a minimum of two (2) months duration, but only during the months of April, May, August or September. Fertilizer shall be applied at the rate of thirty (30) pounds per one thousand (1,000) square feet. Sod shall be fertilized at the time of the second mowing.
- I. Liming: If more than one initial application of limestone is required by the soils analysis to bring the pH of the stockpiled topsoil/loam borrow to a specified range, the Contractor shall be responsible for all additional required lime applications.
- J. Scattered bare spots will be allowed up to a maximum of 2-percent of any lawn area, provided none are larger than 16-square inches. After the grass has sprouted, all bare areas shall be re-seeded or re-sodded repeatedly until all areas are covered with a satisfactory growth of grass. At the time of the first cutting, lawn should be mowed not less than 2.5-inches high. Sod shall be maintained between 1.75 and 2.5-inches high. Do not remove more than one-third of the grass blade. All lawns shall receive at least three mowings before acceptance.

### **3.14 MAINTENANCE AND PROTECTION OF PLANTINGS**

- A. Maintenance shall begin immediately after each plant is planted and shall continue until final acceptance, but in no case less than ninety (90) days after substantial completion of planting.
- B. Maintenance shall include but not be limited to the following:
  - 1. Maintenance of new planting shall consist of pruning, watering, cultivating, weeding, mulching, tightening and repairing of stakes or guys, resetting plants to proper grades or upright position, restoration of the planting saucer and furnishing and applying such sprays as are necessary to keep the planting free of insects and disease.
  - 2. Planting areas and plants shall be protected at all times against trespassing and damage of all kinds for the duration of the maintenance period. If any plants become damaged or injured, they shall be treated or replaced as directed at no additional cost.
  - 3. All plantings shall be watered at least twice per week during maintenance period. At each watering the soil around each tree or shrub shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the City, the required watering may be reduced.
  - 4. Watering shall be provided from April through November.
- C. The Contractor shall provide a maintenance manual for all plant material under his direction. This manual shall contain all necessary maintenance and scheduling information which will enable the Owner to maintain new plantings in a vigorous condition. Before planting work is completed, one copy of the manual is to be submitted to the City for approval. Before the acceptance of the planting work, two copies of the manual shall be furnished to the City for his future reference. The City may require resubmittals of the City maintenance manual if it is determined that the information provided is not sufficient to allow for proper maintenance.

### **3.15 INSPECTION AND ACCEPTANCE**

- A. Conditions of Acceptance
  - 1. Acceptance shall be given for the entire portion of the lawn areas. No partial acceptance will be given.
  - 2. Lawns shall exhibit a uniform, thick, well-developed stand of grass. Lawn areas shall have not bare spots in excess of four inches in diameter and bare spots shall comprise no more than two percent of the total area of that lawn.
  - 3. Lawn areas shall not exhibit signs of damage from erosion, washouts, gullies, or other causes.
  - 4. Pavement surfaces and site improvements adjacent to lawn areas shall be clean and free of spills or overspray from placing or handling of topsoil and seeding operations.
- B. After the minimum specified maintenance period, the Contractor shall request the City, in writing, for an inspection to determine whether the grass stand is acceptable.
  - 1. The request shall be received at least ten (10) days before the anticipated date of inspection.
  - 2. Inspection and acceptance of lawn areas may be requested and granted in part, provided the area for which acceptance is requested is relatively substantial in size and reasonably regular in shape with clearly defined boundaries.
  - 3. If the lawn material and workmanship are acceptable, written notice will be given by the City to the Contractor of a "Certificate of Acceptance".
  - 4. If the lawn work is unacceptable the Contractor shall continue the maintenance of the lawn areas by over seeding, patching sod, replacing erosion control materials, applying additional amendments as required, and other work as necessary to achieve an acceptable stand of grass as determined by the City. The maintenance period shall be extended as necessary for the completion of the work.
  - 5. The Contractor's responsibility for maintenance of lawns or parts of lawns shall cease on receipt of the "Certificate of Acceptance".
- C. Site Cleanup:
  - 1. The Contractor shall leave the site in a clean and neat condition. Final acceptance will not be granted until this condition is met.
  - 2. Protect seeding work and materials from damage due to landscape operations, operations by other contractors or trades, and trespassers.
  - 3. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged seeded areas as necessary.
  - 4. Remove erosion control measures after grass establishment period and repair the area covered with erosion control devices to match adjacent seeded area.

### **3.16 REJECTION AND REPLACEMENT**

- A. Promptly remove rejected plant material from site.
- B. Replace as soon as planting conditions permit all such rejected material with plants of same species and of the quality stated in Contract documents.



**3.17 TWO-YEAR PLANT GUARANTEE AND INSPECTIONS**

- A. One year after the date of acceptance, the Contractor, at the request of the City, shall arrange for a meeting with the City to review the condition of the plantings. Prior to the meeting, the Contractor shall remove tree support systems and tags on plants after 1st year. The City will provide a written report on the results of the inspection. The Contractor shall replace any dead or unhealthy plants at this time.
- B. Two years after the date of acceptance, the Contractor, at the request of the City, shall arrange for a meeting with the City to review the condition of the plantings. Prior to the meeting request, the Contractor's certified arborist shall provide final pruning of trees for shape and form and to remove items such as crossing branches, dead or broken branches. Any disease or insect pests, eggs or larvae shall be treated/removed. A letter from the arborist certifying the above has been completed shall be provided with the meeting request. The City will provide a written report on the results of the inspection. At the City's discretion, the Contractor shall replace any dead or unhealthy plants at this time or provide a credit to the City.
- C. Prune, thin out, and shape trees and shrubs in accordance with standards for pruning shade trees of the National Arborists Association and good horticultural practice and as directed by the City. Pruned trees shall retain requested height and spread. Unless otherwise directed by City, do not cut tree leaders, and remove only injured or dead branches from flowering trees, if any. Prune shrubs to retain natural character.

END OF SECTION

**SECTION 04100**  
**RETAINING WALLS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Provide all labor, equipment, materials and perform all operations necessary to complete the work of this Section as indicated within the Drawings and specified herein.
- B. The work includes:
  - 1. Removing and resetting in-kind an existing stone masonry retaining wall.
  - 2. Removing and resetting in-kind an existing mortarless block segmental retaining wall.
  - 3. Backfilling and compacting granular fill behind the walls.
  - 4. Loaming and seeding impacted areas.

**1.02 PROJECT CONDITIONS**

- A. Examination of Conditions: The Contractor shall be solely responsible for judging the full extent of work requirements involved, including but not limited to the potential need for storing materials temporarily and/or rehandling items prior to final installation.
- B. Traffic: Conduct site preparation and demolition operations to ensure minimum interference with roads and other active facilities.

**1.03 EXISTING SERVICES**

- A. Locations of existing utilities shown on the plan have been developed from existing utility records and/or above ground inspection of the site. Completeness or accuracy of locations or depth of underground utility or structures cannot be guaranteed. Contractor must verify the location and depth of all underground utilities or structures prior to the start of work.
  - 1. Call Dig-Safe at 1-888-344-7233 seventy-two (72) hours prior to to excavation and construction. Record locations on Project Record Documents from Dig-Safe field location markings.
- B. Notify affected utility companies in advance and obtain written approval prior to commencing this Work. Coordinate and pay all applicable fees for disconnecting, removing, capping, and plugging utility services.

**1.04 MATERIALS OWNERSHIP**

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain on the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site and disposed of in a legal manner.

### **1.05 DEFINITIONS**

- A. In-kind: Returning something to its original condition or better.

### **1.06 STANDARDS**

- A. Except as modified by governing codes and by the Contract Documents, comply with applicable provisions and recommendations of the following:
  1. Standard Specification: Commonwealth of Massachusetts, Department of Public Works, Standard Specifications for Highways and Bridges, latest edition.
  2. AASHTO: American Association of State Highway and Transportation Officials, latest edition.
  3. ASTM: American Society of Testing and Materials, latest edition

## **PART 2 - PRODUCTS**

### **2.01 MORTAR**

- A. Mortar shall meet the requirements of MassHighway Standard Specifications Subsection M4.02.15 of Division III Materials.

### **2.02 GEOTEXTILE FILTER FABRIC**

- A. Drainage geotextile filter fabric shall consist of geosynthetic specifically manufactured for use as a permeable soil filter that retains soil while still allowing water to pass throughout the life of the structure. The type and placement of the geotextile filter material shall be as required by the wall manufacturer.

### **2.03 GRAVEL BASE AND GRANULAR BACKFILL**

- A. Gravel foundation base course shall be per MassHighway Specification M1.03.0, Type c (2-inch largest dimension).
- B. Granular backfill shall be ¾-inch crushed stone per MassHighway Specification M2.01.4.

### **2.04 WEEP HOLES**

- A. Weep holes shall be 2-inch diameter PVC pipe, SDR 35 and shall conform to ASTM D3034, or type PS-46 PVC conforming to ASTM F789.

### **2.05 REPAIR MATERIALS**

- A. Use repair materials identical to existing materials:
  1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  2. Use materials whose installed performance equals or surpasses that of existing materials.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Before commencing site preparation and demolition work, the Contractor shall meet jointly with the City Engineer in order to discuss the procedures to be utilized. Contractor shall be held

responsible for any damage to infrastructure designated to remain. The City Engineer will be sole judge as to damage inflicted.

- B. The Contractor shall give the City Engineer and Property Owner adequate advance notice of his readiness to start the replacement of the wall in order that the City Engineer and Owner can review the Contractor's plans.
- C. The work shall be conducted with prime consideration given to the following:
  - 1. Compliance with governing laws and building codes.
  - 2. Safety, protection, and convenience of the public and workmen

### **3.02 PROTECTION OF EXISTING CONDITIONS**

- A. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place. In the event of damage, immediately make all repairs and replacements necessary to the approval of the City Engineer at no additional cost to the City.
  - 1. Protect improvements on adjoining properties and on Owner's property.
- B. Replace damaged property designated to remain with the same size and material.
- C. The Contractor shall be liable for all damage and/or disturbance to existing trees and shrubs not otherwise designated for clearing and removal. When the Contractor's operations damage trees and/or other vegetation to remain, comparable replacement shall be performed as approved by the City Engineer at full replacement cost to the Contractor.
- D. Conduct demolition operations in accordance with the accepted demolition plan and in a manner that will prevent damage to adjacent structures, utilities, pavements and other facilities to remain.
- E. Cease operations immediately if any damage, settlement or other adverse effect on adjacent structures occurs. Immediately notify the City Engineer and regulatory authorities. Do not resume operations until conditions are corrected, damage repaired and approval has been received from the City Engineer.

### **3.03 STONE MASONRY WALL CONSTRUCTION**

- A. Construction of the stone masonry retaining wall shall meet the requirements of MassHighway Standard Specifications Section 690 or as otherwise directed by the Engineer.
- B. Place and compact a gravel base at least 6-inches in depth and shall extend laterally at least 6-inches from both the toe and heel of the wall.
- C. Place and compact granular backfill behind the wall at least 12-inches wide for the full height of the wall less topsoil depth.
- D. Separate the granular fill from the existing soil with geotextile filter fabric in accordance with the manufacturer's written recommendations.
- E. Install weep holes near the base of the wall to prevent groundwater surcharge pressure. The inlets to the weep holes shall be within the granular backfill layer and shall be secured with filter fabric around the inlet to prevent the loss of fines through the pipe. At least one weep hole shall be installed in each wall face, or as otherwise directed by the Engineer. The PVC pipe shall be cut clean at the face, or slightly inside the face, of the wall.
- F. The wall shall be installed to the same dimensions and top-of-wall elevation that currently exist, with the exception that the height of the face of the wall will be increased due to the lowering of the sidewalk.
- G. Upon completion of the wall and approval by the Engineer, the Contractor shall install a new wooden stockade fence in the soil on top of the wall similar to what currently exists and loam

and seed the impacted areas. Full payment of the wall will not be made until the loam and seed has been placed to the satisfaction of the Engineer.

**3.04 SEGMENTAL BLOCK WALL CONSTRUCTION**

- A. Construction of the segmental block retaining wall shall meet the written recommendations for design and construction of Segmental Retaining Walls (SRWs) by the National Concrete Masonry Association or the written instructions by the manufacturer of the existing blocks.
- B. Place and compact a gravel base at least 6-inches in depth and shall extend laterally at least 6-inches from both the toe and heel of the wall.
- C. Place and compact granular backfill behind the wall at least 12-inches wide for the full height of the wall less topsoil depth.
- D. Separate the granular fill from the existing soil with geotextile filter fabric in accordance with the manufacturer's written recommendations.
- E. The wall shall be installed to the same dimensions and top-of-wall elevation that currently exist, with the exception that the height of the face of the wall will be increased due to the lowering of the sidewalk.
- F. Upon completion of the wall and approval by the Engineer, the Contractor shall loam and seed the impacted areas. Full payment of the wall will not be made until the loam and seed has been placed to the satisfaction of the Engineer.

END OF SECTION



## AGREEMENT

THIS AGREEMENT made this \_\_\_\_\_ day of \_\_\_\_\_ in the year \_\_\_\_\_, between \_\_\_\_\_, with a usual place of business at \_\_\_\_\_, hereinafter called the CONTRACTOR, and the City of Newburyport, acting by its Mayor, with a usual place of business at \_\_\_\_\_, hereinafter called the OWNER.

The CONTRACTOR and the OWNER, for the consideration hereinafter named, agree as follows:

1. Scope of Work

The Contractor shall furnish all labor, materials, equipment and insurance to perform all work required for the project known as MERRILL STREET RECONSTRUCTION, CONTRACT No. R13-1019, Dated August 14, 2013, in strict accordance with the Contract Documents, Bid Documents and all related Plans and Specifications. The said Documents, Specifications, Plans and any GENERAL SUPPLEMENTARY CONDITIONS are incorporated herein by reference and are made a part of this Agreement.

2. Contract Price

The Owner shall pay the Contractor for the performance of this Agreement, subject to additions and deductions provided herein, in current funds, the sum of \_\_\_\_\_.

3. Commencement and Completion of Work and Liquidated Damages

It is agreed that time is of the essence of this Agreement. The Contractor shall commence and prosecute the work under this Agreement upon execution hereof and shall complete the work on or before \_\_\_\_\_.

- A. Definition of Term: The Term "Substantial completion" shall mean the date certified by the Owner when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner may occupy the project, or designated portion(s) thereof, for the use for which it is intended.
- B. Time as Essential Condition: It is understood and agreed that the commencement of and substantial completion of the work are essential conditions of this Agreement. It is further agreed that time is of the essence for each and every portion of the Contract Documents wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract Documents any additional time is allowed for the completion of any work, the new time fixed by such extension shall be of the essence of this Agreement. It is understood and agreed that the times for the

completion of the work are reasonable, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

- C. **Progress and Completion:** Contractor shall commence work promptly upon execution of this Agreement and shall prosecute and complete the work regularly, diligently and uninterruptedly at such a rate of progress as will insure Substantial Completion within the stipulated number of calendar days.
- D. **Liquidated Damages:** It is expressly agreed between the Contractor and the Owner that the Contractor will be responsible for all damages which may arise due to the Contractor's failure to substantially complete the work within the above specified time. If the Contractor shall neglect, fail or refuse to complete the work within the specified number of days, or any extension thereof authorized by the Owner, Contractor agrees, as a part of the consideration for the execution of this Contract by the Owner, to pay the Owner the amount specified herein, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day, excluding Saturdays, Sundays and legal Holidays, that the Contractor shall be in default of Substantial completion after the date specified in the Agreement. Due to the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, said amount is agreed to be the amount of damages which the Owner would sustain, and said amount shall be retained from time to time by the Owner from current periodic estimates. The amount of liquidated damages shall be \$500 per day.

4. Performance of the Work

- A. **Direction of the Work:** The Contractor shall supervise and direct the Work, using his best skills and attention which shall not be less than such state of skill and attention generally rendered by the contracting profession for projects similar to the Project in scope, difficulty and location. The Contractor shall maintain adequate supervisory personnel at the project site during the performance of the Work. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Agreement.

- B. **Responsibility for the Work:**

- (1) The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor. This obligation shall also extend to the presence on the Site of suppliers of materials or equipment, their employees, contractors, and agents engaged in the work.

- (2) The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Owner in its administration of the Agreement, or by inspections, tests or approvals required or performed by persons other than the Contractor.

- C. **Permits and Fees:** Unless otherwise expressly provided, the Contractor shall secure and pay for all permits and fees, licenses and inspections necessary for the proper execution



and completion of the Work which are customarily secured after execution of the Agreement and which are legally required at the time the bids are received, and the same shall at all times be the property of the Owner and shall be delivered to the Owner upon completion of the Project.

D. Notices, Compliance With Laws:

(1) The Contractor shall give all notices and comply with all federal, state and local laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work. The Contractor shall provide the Owner with reproductions of all permits, licenses and receipts for any fees paid. The Owner represents that it has disclosed to the Contractor all orders and requirements known to the Owner of any public authority particular to this Agreement.

(2) If the Contractor observes that any of the Contract Documents are at variance with applicable laws, statutes, codes and regulations in any respect, he shall promptly notify the Owner in writing, and any necessary changes shall be accomplished by appropriate modification.

(3) If the Contractor performs any Work which he knows or should know is contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he shall assume full responsibility therefor and shall bear all costs attributable thereto.

(4) In the performance of the Work, the Contractor shall comply with all applicable federal, state and local laws and regulations including those relating to workplace and employee safety. The Contractor shall notify the Owner immediately of any conditions at the place of the work which violate said laws and regulations and shall take prompt action to correct and eliminate any such violations.

E. Project Superintendent: The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site at all times during the progress of the Work. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

F. Progress Schedule: The Contractor, immediately after being awarded the Contract, shall prepare and submit for the Owner's information an estimated progress schedule for the Work. The progress schedule shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

G. Drawings, Specifications and Submittals:

(1) The Contractor shall maintain at the site for the Owner one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, and "As-Built" Drawings and Specifications in good order and marked currently to record all

changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be delivered to the Owner upon completion of the Work.

(2) By approving and submitting Shop Drawings, Product Data and Samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

(3) The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Owner's approval of Shop Drawings, Product Data or Samples unless the Contractor has specifically informed the Owner in writing of such deviation at the time of submission and the Owner has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Owner's approval thereof.

(4) The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the Owner on previous submittals.

(5) No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been approved by the Owner. All such portions of the Work shall be in accordance with approved submittals.

H. Protection of the Work and Owner's Property: The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Agreement. He shall at all times safely guard and protect his own work, and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury. The Contractor shall clean the work area and restore it to its original condition upon completion of the work.

I. Quality of the Work: The Contractor shall perform the work in a good, workmanlike manner. The Contractor hereby guarantees that the entire work constructed by him under the Agreement will meet fully all requirements thereof as to quality of workmanship and materials. The Contractor hereby agrees to make at his own expense any repairs or replacements made necessary by defects in materials or workmanship supplied to him that become evident within one (1) year after the date of the final payment, and to restore to full compliance with the requirements set forth herein any part of the work constructed hereunder, which during said one (1) year period is found to be deficient with respect to any provisions of the Contract Documents. The Contractor also agrees to hold the Owner harmless from claims of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written orders for same from the Owner. If the Contractor fails to make the repairs and replacements promptly, the Owner may do the work and the Contractor shall be liable to the Owner for the cost thereof.

J. Warranty: The Contractor guarantees to Owner that all materials incorporated into the work will be new unless otherwise specified or agreed. Prior to final payment, the Contractor shall deliver to the Owner all manufacturers' warranties, together with such endorsements or assignments as are necessary to ensure to the Owner the full rights and benefits of such warranties.

5. Affirmative Action/Equal Employment Opportunity

The Contractor is directed to comply with all applicable State Laws, Ordinances, Bylaws, and rules and regulations regarding affirmative action/equal employment opportunity requirements. Failure of the Contractor to comply with any such law, rule or regulation shall constitute grounds for the Owner to terminate the Agreement.

6. Site Information Not Guaranteed; Contractor's Investigation

All information given in the Contract Documents relating to subsurface and other conditions, natural phenomena, existing pipes, and other structures is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of the Contractor and is not guaranteed.

It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes, or other structures encountered during construction will be the same as those indicated in the Contract Documents.

Contractor has familiarized himself with the nature and extent of the Contract Documents, work, locality, and with all local conditions and federal, state, and local laws, rules, ordinances, and regulations that in any manner may affect costs, progress, or performance of the work. Contractor has made, or has caused to be made, examinations, investigations, and tests and studies of such reports and related data in addition to those referred to in the paragraph above as he deems necessary for the performance of the work at the Contract Price, within the Contract Time, and in accordance with the other Terms and Conditions of the Contract Documents; and no additional examinations, tests, investigations, reports, and similar data are or will be required by the Contractor for such purposes.

Contractor has correlated the results of all such observations, examinations, investigations, tests, reports, and data with the Contract Documents. Contractor has given the Owner written notice of all conflicts, errors, or discrepancies that he has discovered in the Contract Documents, and the resolution thereof by the Owner is acceptable to the Contractor.

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 or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the Owner, arising from or by reason of any variance which may exist between the information made available and the actual subsurface conditions or other conditions or structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

7. Project Architect or Engineer

There is/is not **circle one** not a project architect-engineer for this project. Except as otherwise indicated in the Contract Documents, the Architect/Engineer shall be a representative of the Owner and the Contractor shall direct all communications, questions and comments on the work and the performance thereof to the Architect/Engineer. Except as otherwise provided, the Architect/Engineer shall have all the authority of the Owner set forth in the Contract Documents. In general, the Architect/Engineer shall have the authority to review the performance of the work, reject work which is defective or otherwise does not comply with the Contract Documents and to order the Contractor to remedy defective work and take such actions which are necessary to make the work conform to the Contract Documents.

8. Wage Rates

Prevailing Wage Rates as determined by the Commissioner of the Department of Labor and Workforce Development under the provisions of Massachusetts General Laws, Chapter 149, Section 26 to 27G, as amended, apply to this project. It is the responsibility of the Contractor to provide the City with certified payrolls and to comply with all requirements of the above-cited statutes.

The schedules of prevailing wage rates are included in the Contract Documents.

9. Payments to the Contractor

A. The Owner shall make payment to the Contractor in accordance with the provisions of the Contract Documents and Section 39G of Chapter 30 of the General Laws of the Commonwealth of Massachusetts. The Contractor shall submit requisitions for payment as required by said provisions and the directions of the Owner.

D. Claims for Additional Costs: If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Owner written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property. No such claim shall be valid unless so made. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

10. Final Payment, Effect

The acceptance of final payment by the Contractor shall constitute a waiver of all claims by the Contractor arising under the Agreement.

11. Contract Documents

The Contract Documents include the following documents (whether so titled or similarly titled), together with this Agreement:

Bid Documents  
Invitation to Bid  
Instructions for Bidders  
This Contract Form  
Form of Bid and Bid Price Form

General Terms and Conditions  
Performance Bond and Payment Bond  
Certifications of Bidder  
Clerk's Certificate of Corporate Vote  
Certificates of Insurance  
General Conditions and Supplementary Conditions  
General Requirements  
Specifications  
Contract Drawings  
Addenda  
Schedule of Prevailing Wages

12. Terms Required By Law

This Agreement shall be considered to include all terms required to be included in it by the Massachusetts General Laws, and all other laws, as though such terms were set forth in full herein.

13. Indemnification

The Contractor shall indemnify and hold harmless the Owner from and against any and all claims, damages, losses, and expenses, including attorney's fees, arising out of the performance of this Agreement when such claims, damages, losses, and expenses are caused, in whole or in part, by the acts, errors, or omissions of the Contractor or his employees, agents, subcontractors or representatives.

14. Insurance

The Contractor shall purchase and maintain such insurance as will protect both the Owner and the Contractor from claims which may arise under the Agreement, including operations performed for the named insured by independent contractors and general inspection thereof by the named insured. In addition, the Contractor shall require its subcontractors to maintain such insurance. Coverage shall be provided for:

1. claims under workers' compensation, disability benefit and other applicable employee benefit acts;
2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
4. claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person;
5. claims for damages, including damages to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

- .6 claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle; and
- .7 claims involving contractual liability applicable to the Contractor's obligations under Article 13.

The limits of liability for coverage required under the preceding paragraph shall be as required by the Owner.

Except for Workmen's Compensation, all liability coverage shall name the City of \_\_\_\_\_ as an additional insured and shall provide for 30 days prior written notice to the City of any modification or termination of coverage provided thereby. The Contractor shall provide the Owner with appropriate certificate(s) of insurance evidencing compliance with this provision prior to the commencement of any work under this Agreement.

15. Notice

All notices required to be given hereunder shall be in writing and delivered to, or mailed first class to, the parties' respective addresses stated above. In the event that immediate notice is required, it may be given by telephone or facsimile, but shall, to the extent possible, be followed by notice in writing in the manner set forth above.

16. Termination

- A. Each party shall have the right to terminate this Agreement in the event of a failure of the other party to comply with the terms of the Agreement. Such termination shall be effective upon seven days' notice to the party in default and the failure within that time of said party to cure its default.
- B. The Owner shall have the right to terminate the Agreement without cause, upon ten (10) days' written notice to the Contractor. In the event that the Agreement is terminated pursuant to this subparagraph, the Contractor shall be reimbursed in accordance with the Contract Documents for all Work performed up to the termination date, and for all materials or equipment not incorporated in the Work, but delivered and suitably stored at the site. Payment for material or equipment stored at the site shall be conditioned upon submission by the Contractor of bills of sale or such other evidence as is satisfactory to Owner to establish the Owner's title to such material or equipment or otherwise protect the Owner's interests.

17. Miscellaneous

- A. Royalties and Patents: The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified; but if the Contractor believes or has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Owner, and thereafter the Owner insists on the use of the design, process or products specified.

- B. Assignment: The Contractor shall not assign or transfer any of its rights, duties or obligations under this Agreement without the written approval of the Owner.
- C. Governing Law: This Agreement shall be governed by and construed in accordance with the law of the Commonwealth of Massachusetts.
- D. Statutory Compliance: By its signature hereon, the Contractor certifies, under the pains and penalties of perjury, that it has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals, the Owner by its authorized representatives who, however, incur no personal liability by reason of the execution hereof or of anything herein contained, as of the day and year first above written.

CONTRACTOR:

OWNER: City of Newburyport

By its \_\_\_\_\_  
(Title)

By its \_\_\_\_\_  
(Mayor)

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Signature)

In accordance with M.G.L. C.44, Section 31C, this is to certify that an appropriation in the amount of this contract is available therefor and that the \_\_\_\_\_ has been authorized to execute the contract and approve all requisitions and change orders.

By its: \_\_\_\_\_  
City Auditor

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Signature)

END OF DOCUMENT