CITY OF QUINCY, MASSACHUSETTS

CONTRACT AND SPECIFICATIONS

FOR

MT. WOLLASTON CEMETERY
IMPROVEMENTS PROJECT

QUINCY, MA

May 15, 2017

DESIGN CONSULTANTS INC.
1495 Hancock Street, Suite 205
Quincy, MA 02169
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## WOLLASTON CEMETERY IMPROVEMENTS

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INVITATION TO BID

Mount Wollaston Cemetery Improvements

The Department of Public Works for the City of Quincy, Massachusetts is seeking sealed bids for Mount Wollaston Cemetery Improvements until 11:30 a.m. local time June 1, 2017, in the office of the Purchasing Agent, 1305 Hancock St., Quincy, Massachusetts 02169, at which time and place all bids will be publicly opened and read aloud. Late bids delivered by mail or in person will be rejected.

The work includes demolition of the existing water system, 61 water fountains, sidewalks and limited asphalt; installation of 14,706 linear feet of small diameter high pressure plastic water pipe, two meter pits, 74 granite post water fountains and an estimated 1.7-acre irrigation system; construction of 5,331 square feet of roadway grading improvements with 282 ton of asphalt; and the complete restoration of public property to pre-construction conditions.

Detailed specifications are available on-line at the City of Quincy’s website, www.quincyca.gov and also available at the Office of the Purchasing Agent, Quincy City Hall, 1305 Hancock Street, Quincy, Massachusetts, 02169, between the hours of 8:30 AM and 4:30 PM for a refundable printing charge of $50.00, if returned 10 days within Bid opening and in unused condition. Specifications will be available May 15, 2017.

A Pre-Bid Conference will be held on May 25, 2017 at 10:00 a.m. at the office of the Quincy Park and Forestry Department, One Merrymount Parkway, Quincy, MA 02169. All bidders are encouraged to attend. Requests for interpretation of bid documents may be submitted in writing at that time.

All work under this contract shall be completed by August 18, 2017. Each bid shall be accompanied by a bid security in the amount of five percent (5%) of the total value of the bid in the form of a bid bond or certified/treasurer's check.

The bidding and award of this contract shall be in full compliance with Massachusetts General Laws, Chapter 30, Section 39M, as last revised. All applicable Federal, State and City of Quincy regulations in relation to Equal Employment Opportunity and subject to the minimum wage rates set under the Massachusetts Prevailing Wage Law Chapter 149, §26. The City reserves the right to waive any informality in or to reject any or all bids when such an action is deemed in the best interests of the City.

Non-responsive, and/or unbalanced bids may be rejected.

Thomas P. Koch
Mayor

Paul Franz
Director of Park and Forestry

Kathryn R. Hobi
Purchasing Agent

Consulting Engineer: Design Consultants Inc., 1495 Hancock Street, Suite 205, Quincy, MA 02169

The Quincy Sun
The Central Register
COMMBUYS

Advertise
MAY 11, 2017
MAY 10, 2017
MAY 10, 2017

Req. No.
S060117

Mt. Wollaston Cemetery Improvements
Quincy, MA
INVITATION TO BID
2016-086
00020-1
SECTION 00100

INSTRUCTIONS TO BIDDERS

Article 1. Receipt and Opening of Bids
Article 2. Deposit on Drawings and Documents
Article 3. Ability and Experience of Bidder
Article 4. Information not Guaranteed
Article 5. Subsurface Investigation
Article 6. Easements
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Article 18. Execution of Agreement
Article 19. Insurance Certificates
Article 20. Massachusetts Sales and Use Tax
Article 21. Massachusetts Wage Rates
Article 22. Health and Safety Regulations
Article 23. Manufacturer’s Experience
Article 24. Equal Products Acceptable
Article 25. Access to Work
Article 26. Change Orders
Article 27. Utility Underground Plant Damage Prevention System
Article 28. Competitive Bidding

ARTICLE 1. RECEIPT AND OPENING OF BIDS

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

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

1.3 Bidders are cautioned that it is the responsibility of each individual bidder to assure that his bid is in the possession of the responsible official or his designated alternate prior to the stated time and at the place of the Bid Opening. Owner is not responsible for bids delayed by mail and/or delivery services, of any nature.
ARTICLE 2. DEPOSIT ON DRAWINGS AND DOCUMENTS

2.1 The deposit for Drawings and other Contract Documents will be refunded upon the return of said Drawings and Documents in good condition. To ensure refund of the deposit, said Drawings and Documents must be returned to the office from which they were taken within ten (10) days after the bid opening, and be accompanied by a letter of transmittal.

2.2 Upon award of the contract, the Contractor will be provided with two (2) copies of drawings and one full size set of reproducibles from which he can make, at his own expense, full size prints necessary for execution of the Work.

ARTICLE 3. ABILITY AND EXPERIENCE OF BIDDER

3.1 No award will be made to any bidder who cannot satisfy the Owner that he has sufficient ability and experience in this class of work and sufficient capital and plant to enable him to prosecute and complete the Work successfully within the time named. The Owner’s decision or judgment on these matters shall be final, conclusive, and binding.

3.2 The Owner may make such investigations as it deems necessary, and the Bidder shall furnish to the Owner, under oath if so required, all such information and data for this purpose as the Owner may request.

ARTICLE 4. INFORMATION NOT GUARANTEED

4.1 All information given on the Drawings or in the other 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 bidders and is not guaranteed.

4.2 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 on the Drawings or in the other Contract Documents.

4.3 It is agreed further and understood that no bidder or contractor shall 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 or the Engineer, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other conditions, natural phenomena, existing pipes or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.
ARTICLE 5. SUBSURFACE INVESTIGATION

5.1 Historic subsurface investigations for the existing high pressure sewer line at the site are on file with the Quincy Department of Public Works.

5.2 Two days of geophysical activities have been allotted for by the City for the Veteran’s Cemetery Area.

ARTICLE 6. EASEMENTS

6.1 As indicated on the drawings, a portion of the work will be located adjacent to and in an existing Massachusetts Water Resource Authority (MWRA) easement. As part of their ongoing utility clearance activities, the Contractor shall coordinate all work within the easement with the MWRA.

6.2 On all other lands, the Contractor has no rights unless he obtains them from the proper parties.

6.3 The Contractor shall have no claim for additional compensation or damage on account of any delay in obtaining the necessary easement approvals.

ARTICLE 7. OTHER CONTRACTS

7.1 The attention of bidders is directed to the fact that the work to be done under this contract is only part of a program of improvements, that contracts have been let for additional facilities, and that the successful operation of the improvements is dependent upon the completion of the work under this contract and of the work to be done by others.

7.2 It is essential that all parties interested in the project cooperate to the end that the entire project will be brought to a successful conclusion as rapidly as possible, but the Owner cannot guarantee that no interference or delay will be caused thereby. Interference and delay resulting from such cooperation shall not be the basis of claims against the Owner.

ARTICLE 8. BIDDERS TO INVESTIGATE

8.1 Bidders are required to submit their Bids upon the following express conditions which shall apply to and be deemed a part of every Bid received, viz:

8.2 Bidders must satisfy themselves by personal examination of the site of the Work and by such other means as they may wish, as to the actual conditions there existing, the character and requirements of the Work, the difficulties attendant upon its execution, and the accuracy of all estimated quantities stated in the Bid.
ARTICLE 9. QUESTIONS REGARDING DRAWINGS AND DOCUMENTS

9.1 In general, no answer will be given to prospective bidders in reply to an oral question if the question involves an interpretation of the intent or meaning of the Drawings or other Contract Documents, or the equality or use of products or methods other than those designated or described on the Drawings or in the Specifications. Any information given to bidders other than by means of the Drawings and other Contract Documents, including Addenda, as described below, is given informally, for information and the convenience of the bidder only and is not guaranteed. The bidder agrees that such information shall not be used as the basis of nor shall the giving of any such information entitle the bidder to assert any claim or demand against the Owner or the Engineer on account thereof.

9.2 To receive consideration, all questions regarding this bid should be directed to Kathryn R. Hobin, Purchasing Agent, by emailing purchasing@quincyma.gov at least seven days before the established date for receipt of Bids. The City will neither approve nor disapprove particular products prior to the opening of Bids; such products will be considered when offered by the Contractor for incorporation into the Work, in accordance with the requirements of Section 01300 - SUBMITTAL PROCEDURES.

9.3 The Purchasing Agent will set forth as Addenda, which shall become a part of the Contract Documents, such questions received as above provided as in his sole judgment are appropriate or necessary and his decision regarding each. At least three days prior to the receipt of Bids, he will send a copy of these Addenda to those prospective bidders and parties known to have taken out sets of the Drawings and Contract Documents.

9.4 The Contractor agrees to use and base his/her bid on the products and methods designated or described in the Specifications as amended by the Addenda.

ARTICLE 10. BLANK FORM FOR BID

10.1 All bids must be upon the blank form for Bid annexed hereto, state the proposed price of each item of the Work, both in words and in figures, and be signed by the bidder with his business address and place of residence.

ARTICLE 11. ALTERNATES

11.1 Alternate unit prices are required for certain portions of the work. Bidders shall submit prices for all alternates. The Owner reserves the right to select the alternate deemed to be in the best interest of the Owner.

ARTICLE 12. BID SECURITY
12.1 Each bid must be accompanied by cash or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company and payable to the order of the City of Quincy or by a bid bond prepared on the form of BID BOND (see Sections 00300 and 00305) attached hereto duly executed and acknowledged by the bidder, as Principal, and by a surety company qualified to do business in the Commonwealth of Massachusetts and satisfactory to the Owner, as Surety. The cash, check or bid bond shall be in the sum of 5 percent of the value of the Bid and shall be enclosed in the sealed envelope containing the Bid.

12.2 Each such check, bid bond, or cash amount may be held by the Owner as security for the fulfillment of the bidder's agreements as hereinabove set forth and as set forth in the BID. Should the bidder fail to fulfill such agreements his cash or bid check shall become the property of the Owner or if a bid bond was furnished the bid bond shall become payable to the Owner, as liquidated damages; otherwise, the cash or bid check shall be returned to the bidder as hereinafter provided, or if the security is a bid bond, the bid bond shall become null and void.

12.3 Bid securities will be returned to all except the three lowest bidders within five days, Sundays and legal holidays excluded, after the opening of Bids, and to the three lowest bidders within five days, Sundays and legal holidays excluded, after the Owner and the accepted bidder have executed the AGREEMENT. In the event that the AGREEMENT has not been executed by both the accepted bidder and the Owner within 60 consecutive days after the opening of Bids, the bid security will be returned promptly to any bidder who has not been notified of the acceptance of his Bid.

12.4 Bid checks or cash accompanying Bids which are rejected will be returned within five days, Sundays and legal holidays excluded, after rejection.

12.5 None of the three lowest Bids shall be deemed rejected, notwithstanding acceptance of any BID, until the AGREEMENT has been executed by both the Owner and the accepted bidder.

ARTICLE 13. WITHDRAWAL OF BIDS

13.1 Except as hereinafter in this subsection otherwise expressly provided, once his Bid is submitted and received by the Owner for consideration and comparison with other bids similarly submitted, the bidder agrees that he may not and will not withdraw it within thirty days excluding Saturdays, Sundays and legal holidays after the actual date of the opening of Bids.

13.2 Upon proper written request and identification, Bids may be withdrawn only as follows:

1. At any time prior to the designated time for the opening of Bids.
2. Provided the Bid has not theretofore been accepted by the Owner, at any time subsequent to the expiration of the period during which the bidder has agreed not to withdraw his Bid.

13.3 Unless a Bid is withdrawn as provided above, the bidder agrees that it shall be deemed open for acceptance until the AGREEMENT has been executed by both parties thereto or until the Owner notifies a bidder in writing that his Bid is rejected or that the Owner does not intend to accept it, or returns his Bid deposit. Notice of acceptance of a Bid shall not constitute rejection of any other Bid.

ARTICLE 14. RIGHT TO REJECT BIDS

14.1 The Owner reserves the right to reject any or all Bids, should the Owner deem it to be in the public interest to do so.

14.2 The Owner may reject Bids which in its sole judgment are either incomplete, conditional, obscure or not responsive or which contain additions not called for, erasures not properly initialed, alterations, or similar irregularities, or the Owner may waive such omissions, conditions or irregularities.

ARTICLE 15. COMPARISON OF BIDS

15.1 Bids will be compared on the basis of the quantities and unit and lump-sum prices stated in the BID.

15.2 In the event that there is a discrepancy in the Bid between the lump sum or unit prices written in words and figures, the prices written in words shall govern.

15.3 The Owner agrees to examine and consider each Bid submitted in consideration of the Bidder's agreements, as hereinabove set forth and as set forth in the BID.

ARTICLE 16. REDUCTION IN SCOPE OF WORK

16.1 The Owner reserves the right to decrease the scope of the work to be done under this contract and to omit any work in order to bring the cost within available funds. To this end, the Owner reserves the right to reduce the quantity of any items or omit all of any items as set forth in the BID, either prior to executing the contract or at any time during the progress of the work. The Owner further reserves the right, at any time during the progress of the work, to restore all or part of any items previously omitted or reduced. Exercise by the Owner of the above rights shall not constitute any ground or basis of claim for damages or for anticipated profits on the work omitted.

ARTICLE 17. CONTRACT BONDS
17.1 The Bidder whose Bid is accepted agrees to furnish the Contract Bonds in the forms which follow in Section No. 00610 Performance Bond and Section 00620 Payment Bond, each in the sum of the full amount of the Contract and duly executed by the said bidder as Principal and by a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the Owner, as Surety, for the faithful performance of the Contract and payment for labor and materials. The premiums for such Bonds shall be paid by the Contractor.

ARTICLE 18. EXECUTION OF AGREEMENT

18.1 The Bidder whose Bid is accepted will be required and agrees to duly execute the AGREEMENT and furnish the required CONTRACT BONDS within the time limit stated in the BID after notification that the AGREEMENT is ready for signature.

18.2 The Bidder to whom the Contract is awarded shall comply with the provisions of Chapter 30, Section 39R of the General Laws of Massachusetts as amended to date; and as provided therein shall, prior to execution of the contract, file a statement of management on internal accounting controls and an audited financial statement for the most recent completed fiscal year. See Section 01069-STATE REQUIREMENTS.

ARTICLE 19. INSURANCE CERTIFICATES

19.1 The Contractor will not be permitted to start any construction work until he has submitted certificates covering all insurances called for under the General and Supplementary Conditions of Sections 00700 and 00800.

ARTICLE 20. MASSACHUSETTS SALES AND USE TAX

20.1 Materials and equipment purchased for permanent installation in this project will be exempt from the Massachusetts Sales and Use Tax. The exemption certificate number will be furnished to the Contractor. Each bidder shall take this exemption into account in calculating his bid for the work.

ARTICLE 21. MASSACHUSETTS WAGE RATES

21.1 Massachusetts Wage Rates as established pursuant to the provisions of M.G.L. Chapter 149 Section 26-27G apply to this project. The Massachusetts Wage Determination is attached to these specifications. It is the responsibility of the Contractor, before bid opening, to request, if necessary, any additional information on Massachusetts Wage Rates for those tradespeople who are not covered by the applicable Massachusetts Wage Decision, but who may be employed for the proposed work under this contract.

ARTICLE 22. HEALTH AND SAFETY REGULATIONS
22.1 This project is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR, Part 1926 and to all subsequent amendments, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety ‘Rules and Regulations for the Prevention of Accidents in Construction Operations’ (Chapter 454 CMR 10.00 et seq.). Contractors shall be familiar with the requirements of these regulations.

ARTICLE 23. MANUFACTURER’S EXPERIENCE

23.1 Whenever it is written that an equipment manufacturer must have a specified period of experience with his product, equipment which does not meet the specified experience period can be considered if the equipment supplier or manufacturer is willing to provide an "Efficiency Guarantee Bond" or cash deposit for the duration of the specified time period which will guarantee replacement of that equipment in the event of failure.

ARTICLE 24. EQUAL PRODUCTS ACCEPTABLE

24.1 Wherever in the Drawings and Specifications any item of equipment or material is designated by reference to a particular brand, manufacturer, or trade name, it is understood that an approved equal product, acceptable to the Engineer, may be substituted by the Bidder or Contractor. With a few exceptions, whenever a material, article, or piece of equipment is identified by reference to a manufacturer or trade name, it shall be understood that this is referenced for defining the performance of the material, article, or piece of equipment, and that other products of equal capacities, quality, and function shall be considered. It shall be the Contractor's responsibility to coordinate all submittals to eliminate any conflicts which might arise due to the use of the "or equal" item. Any additional costs incident to the use of "or equal" items, including re design, will be paid by the Contractor.

ARTICLE 25. ACCESS TO WORK

25.1 Representatives of the Commonwealth and any local agencies having a direct interest in the Work shall have access to the Work under this contract wherever it is in preparation or progress and which required the Contractor to provide proper facilities for such access and inspection.

ARTICLE 26. CHANGE ORDERS

26.1 Change orders will be processed in accordance with the requirements which are included under the General Conditions and Supplementary Conditions.

ARTICLE 27. UTILITY UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
27.1 All excavations within public or private ways are subject to the requirements of Massachusetts General Law, Chapter 82, Section 40 included in Part II of the Supplementary Conditions.
ARTICLE 28. COMPETITIVE BIDDING

28.1 The bidding and award of the Contract shall be in full compliance with Section 39 M inclusive of Chapter 30 of the General Laws of the Commonwealth of Massachusetts as last revised.

END OF SECTION 00100
SECTION 00300

BID FORM

To the City of Quincy, Massachusetts:

Regarding: Mt. Wollaston Cemetery Improvements

The Undersigned, as determined to be an eligible Bidder, declares as follows:

- The only parties interested in this BID as Principals are named herein;

- this BID is made without collusion with any other person, firm, or corporation;

- no officer, agent, or employee of the Owner is directly or indirectly interested in this BID;

- the Bidder has carefully examined the site of the proposed Work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed Work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this BID, and has carefully read and examined the Drawings, the annexed proposed AGREEMENT and the Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;

- understands that information relative to subsurface and other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) has been furnished only for his information and convenience without any warranty or guarantee, expressed or implied, that the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered will be the same as those shown on the Drawings or in any of the other Contract Documents and agrees that the Bidder shall not use or be entitled to use any such information made available to him through the Contract Documents or otherwise or obtained by him in his own examination of the site, as a basis of or ground for any claim against the Owner or the Engineer arising from or by reason of any variance which may exist between the aforesaid information made available to or acquired by him and the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered during the construction work, and has made due allowance therefore in this BID;

- and the Bidder understands that the quantities of work tabulated in this BID or indicated on the Drawings or in the Specifications or other Contract Documents are only approximate and are subject to increase or decrease as deemed necessary by the Engineer;

- and agrees that, if this BID is accepted will contract with the Owner, as provided in the copy of the Contract Documents deposited in the office of the Engineer, this BID form being part of said Contract Documents, and that the Bidder will perform all the work and furnish all the materials and equipment, and provide all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other things required by the Contract Documents in the manner and within the time therein prescribed and according to the requirements of the Engineer as therein set forth,
and that the Bidder will take in full payment therefore the lump sum or unit price applicable to each item of the Work as stated in the following schedule.

Bidders must bid on each Bid Item. All entries in the entire BID must be made clearly and in ink; prices bid must be written in both words and figures. In case of discrepancy, the amount shown in words will govern.

Bidders shall insert extended item prices obtained from quantities and unit prices. In case of discrepancy between the product obtained by multiplying the estimated quantity by the unit price, the actual product shall apply. In case of discrepancy between the sum of the total figure of the items and the total amount listed, the actual sum shall apply.

Receipt of Addenda numbered _____ to _____, inclusive, is acknowledged.

(Bidder) ____________________________________________
(by) ____________________________________________
(Title) ____________________________________________
## BASE BID

**PART I -** The work of the General Bidder, being all work covered by items 1 through 22, inclusive.

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM DESCRIPTION AND UNIT PRICE (WORDS AND FIGURES)</th>
<th>ESTIMATED QUANTITY</th>
<th>EXTENDED TOTAL (FIGURES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>For Mobilization and Demobilization</td>
<td>Dollars</td>
<td>LS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>() Lump Sum</td>
<td>$</td>
</tr>
<tr>
<td>2</td>
<td>For Field Trailer Setup and Maintenance</td>
<td>Dollars</td>
<td>LS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>() Lump Sum</td>
<td>$</td>
</tr>
<tr>
<td>3</td>
<td>For Field Engineering</td>
<td>Dollars</td>
<td>LS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>() Lump Sum</td>
<td>$</td>
</tr>
<tr>
<td>4</td>
<td>For Erosion Control Barriers (9-inch Wattles)</td>
<td>Dollars</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>() per Liner Foot</td>
<td>$</td>
</tr>
<tr>
<td>5</td>
<td>For Site Preparation and General Demolition</td>
<td>Dollars</td>
<td>LS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>() Lump Sum</td>
<td>$</td>
</tr>
<tr>
<td>6</td>
<td>For Existing Water Fountain Demolitions</td>
<td>Dollars</td>
<td>LS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>() Lump Sum</td>
<td>$</td>
</tr>
<tr>
<td>7</td>
<td>For Catch Basin (Remove and Replace)</td>
<td>Dollars</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>() Lump Sum</td>
<td>$</td>
</tr>
<tr>
<td>8</td>
<td>For Greenleaf Street (Balsam, Sycamore and Linden Avenue) Roadway Regrading</td>
<td>Dollars</td>
<td>LS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>() Lump Sum</td>
<td>$</td>
</tr>
</tbody>
</table>

Mt. Wollaston Cemetery Improvements
Quincy, MA
2015-086

BID FORM
00300 - 3
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM DESCRIPTION AND UNIT PRICE (WORDS AND FIGURES)</th>
<th>QUANTITY</th>
<th>EXTENDED TOTAL (FIGURES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>For Greenleaf Street (Balsam, Sycamore and Linden Avenue) Roadway Paving Dollars 100 $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>For Water Service Taps Dollars 2 BY OTHERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>For Water Meter Manholes Dollars 2 $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>For Water Meters Dollars 2 $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>For 2-inch High Pressure Polyethylene, Class 200 Pipe Dollars 50 $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>For 1 1/2-inch High Pressure Polyethylene, Class 200 Pipe Dollars 5,328 $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>For 1-inch High Pressure Polyethylene, Class 200 Pipe Dollars 9,328 $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>For Veteran’s Area Irrigation System Twenty Five Thousand – XX/00 Dollars LS 25,000.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mt. Wollaston Cemetery Improvements
Quincy, MA
2015-086
BID FORM
00300 - 4
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM DESCRIPTION AND UNIT PRICE (WORDS AND FIGURES)</th>
<th>ESTIMATED QUANTITY</th>
<th>EXTENDED TOTAL (FIGURES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>For Granite Post and Water Fountain Installations</td>
<td>Dollars 74</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>($ ) Each</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>For Extra Granite Posts and Water Fountain Material Kits</td>
<td>Dollars 10</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>($ ) Each</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>For the Water Fountain Splash Pads</td>
<td>Dollars 74</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>($ ) Each</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>For Asphalt Trench Patching</td>
<td>Dollars 182</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>($ ) per Ton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>For Topsoiling and Seeding of Disturbed Areas</td>
<td>Dollars LS</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>($ ) Lump Sum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>For Remaining Lump Sum Items</td>
<td>Dollars LS</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>($ ) Lump Sum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL FOR BASE BID**

Total Amount of Base Bid (Part I, Items 1 through 22 inclusive)

$ __________

(Amount in figures)

(Amount in words)

The base bid price shall be the basis of award.

Mt. Wollaston Cemetery Improvements
Quincy, MA 2015-086

BID FORM 00300 - 5
PART II - Add-Alternate Unit Items
In addition to the aforementioned Base Bid, the Bidder shall provide unit prices for the following Add-Alternate Items that the Owner may elect to add to the Base Bid. The inclusion of one or more of the Add-Alternate Items to the contract shall be at the discretion of the Owner and subject to available funding:

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION AND UNIT PRICES</th>
<th>ESTIMATED UNIT PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>For Full Width Pavement Milling and Compaction Dollars</td>
<td>$ _____/SY</td>
</tr>
<tr>
<td></td>
<td>($) per Square Yard</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>For Full Width Pavement of Roadways (4” to 6” Thick) Dollars</td>
<td>$ _____/Ton</td>
</tr>
<tr>
<td></td>
<td>($) per Ton</td>
<td></td>
</tr>
</tbody>
</table>

The above unit prices shall include all labor, materials, equipment, installation, testing, overhead, profit, and insurance to cover the work called for.

**Basis of Award:** The basis of award shall be at the Owner’s sole discretion. Contract to be awarded to the lowest responsible and eligible bidder. Pursuant to M.G.L. Chapter 149 §44A (2) (D), the award of the Contract shall be in full compliance with M.G.L. Chapter 30 §39M, as last revised. The total of the Base Bid (Part I) shall be considered when determining the lowest responsive bidder.

Specific items of this Contract may be eliminated or reduced in quantity to keep within limits of available funding, at the OWNER’S option.

The bidder understands that the Owner reserves the right to reject any and all bids and to waive any informality in the bidding.

The bid security accompanying this BID shall be in the amount of 5 percent of the BID payable to the City of Quincy.

The time for completion of the base bid items of this contract is **60 calendar days**. Liquidated damages specified in this contract are $1,000 per day for each calendar day beyond the contract completion date that work remains uncompleted.

The time period for holding bids, where Federal approval is not required is 60 days, Saturdays, Sundays, and legal holidays excluded, after the opening of the General Bids and where Federal approval is required, the time for holding bids is 60 days, Saturdays, Sundays and holidays excluded after Federal approval.
The undersigned agrees that if the Owner accepts this BID, the bidder will duly execute and acknowledge the AGREEMENT and furnish, duly executed and acknowledged, the required CONTRACT BONDS within ten (10) days, Saturdays, Sundays, and legal holidays excluded, after notification that the AGREEMENT and other Contract Documents are ready for signature.

A performance bond in an amount equal to 100 percent of the total amount of the bid with a surety company qualified to do business in the Commonwealth of Massachusetts will be required for the faithful performance of the contract, as well as a labor and materials bond in an amount equal to 100 percent of the total bid amount.

Should the bidder fail to fulfill any of his agreements as hereinabove set forth, the Owner shall have the right to retain as liquidated damages the amount of the bid check or cash which shall become the Owner’s property. If a bid bond was given, it is agreed that the amount thereof shall be paid as liquidated damages to the Owner by the Surety.

The bidder, by submittal of this BID, agrees with the Owner that the amount of the bid security deposited with this BID fairly and reasonably represents the amount of damages the Owner will suffer due to the failure of the bidder to fulfill his agreements as above provided.

The undersigned as Bidder, hereby certifies that he is aware of the applicable requirements of the Williams-Steiger Occupational Safety and Health Act of 1970. (O.S.H.A.), and all latest revisions thereto, and that this Proposal is prepared on the basis of compliance with those requirements.

Pursuant to M.G.L. Ch. 62C, sec. 49A, the undersigned certifies under the penalties of perjury that the said undersigned, to my best knowledge and belief, have filed all state tax returns and paid all state taxes required under law. The attached CERTIFICATE AS TO PAYMENT OF STATE TAXES must be signed and submitted as part of this Bid Proposal.

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The attached CERTIFICATE OF NON-COLLUSION must be signed and submitted as part of the Bid Proposal.

This Proposal must bear the written signature of the Bidder or that of his duly authorized agent. If the Bidder is a corporation or a partnership, the bid must be signed by a duly authorized officer of such corporation or by a Partner and the title of such officer must be stated. Satisfactory completion of the following data is an essential part of submission of this Proposal and is required. Bid must be embossed with corporate seal.
Respectfully submitted:

(Name of General Bidder) ____________________________ SEAL (if corporation)

By ____________________________ Date ________________
(Signature and title of authorized representative)

(Telephone Number) ____________________________ (Business address)

(Fax Number) ____________________________ (City, State, Zip)

The following documents are attached to and made a condition of the bid, and shall be filed with the bid:

- Bid Security (5%)
- Completed Bid Proposal (Section 00300, including references)
- Completed Certificate of Non-Collusion (Section 00480)
- Completed Certificate as to Corporate Vote (Section 00481)
- Completed Certificate as to Payment of State Taxes (Section 00482)
- Completed Indemnity Agreement (Section 00520)

Bidders are required to list three or more of your firm's recent projects of a similar character as required for acceptable bid. References will enable the Owner to judge his experience, skill, and business standing.
Project Name: 

Project Location: 

Contract Amount: $ ________________ Completion Date: ________________

Owner: 

Contact Name: ________________ Telephone: ________________

Architect/Engineer: 

Contact Name: ________________ Telephone: ________________

Project Name: 

Project Location: 

Contract Amount: $ ________________ Completion Date: ________________

Owner: 

Contact Name: ________________ Telephone: ________________

Architect/Engineer: 

Contact Name: ________________ Telephone: ________________
<table>
<thead>
<tr>
<th><strong>Project Name:</strong></th>
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<tr>
<td>____________________________</td>
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<table>
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<tr>
<th><strong>Project Location:</strong></th>
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<tr>
<td>____________________________</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Contract Amount:</strong> $</th>
<th><strong>Completion Date:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________________</td>
<td>____________________________</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Owner:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________________</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Contact Name:</strong></th>
<th><strong>Telephone:</strong></th>
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<tr>
<td>____________________________</td>
<td>____________________________</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Architect/Engineer:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________________</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Contact Name:</strong></th>
<th><strong>Telephone:</strong></th>
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<tr>
<td>____________________________</td>
<td>____________________________</td>
</tr>
</tbody>
</table>
SECTION 00305
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, ___________________________ as Principal and ___________________________ as Surety, are hereby held and firmly bound unto ___________________________ as OWNER in the penal sum of ___________________________ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns ___________________________.

Signed this ______________ day of ____________ , 2017.

The Condition of the above obligation is such that whereas the Principal has submitted to: a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing for the:

______________________________

______________________________

______________________________

NOW, THEREFORE,

(A) If said BID shall be rejected, or

(B) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor, or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall in no way be impaired or affected by any extension of the time within which the OWNER may accept such BID, and said Surety does hereby waive notice of any such extension.
IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these present to be signed by their proper officers the day and year first set forth above.

_____________________________ (L.S.)

Principal

_____________________________

Surety

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department’s most current list (Cir. 570, as amended) and be authorized to transact business in the state where the project is located.
SECTION 00315

RIGHT-TO-KNOW LAW

A bidder will not be eligible for award of this contract under this invitation for bids unless such bidder has submitted as part of its bid the following certification which will be deemed a part of the resulting contract.

CERTIFICATION

The Bidder hereby certifies that, if awarded this contract, he will fully comply with the Massachusetts Right-To-Know Law, c.470 of the Acts of 1983, (the Act). In addition, he shall:

1. obtain a Material Safety Data Sheet (MSDS), for all substances or mixtures of which appear on the Massachusetts Substance List that he or any of his subcontractors brings to or uses on the worksite and will keep a copy of the MSDS on the worksite of this contract;

2. label each container of a substance or mixture of substances on the Massachusetts Substance List, as required, in section 7 of the Act;

3. provide the same training and non-technical instruction that he is required to provide under section 15 of the Act to all Quincy personnel. Training shall include instructing on the nature and effects of any substance or mixture of substances listed on the Massachusetts Substance List which the Bidder or any of his subcontractors brings to or uses on the worksite.

4. provide to Quincy DPW employees on the worksite the same protective equipment that the bidder or any of his subcontractors provides to his employees.

Signature of Authorized Representative of Bidder:

________________________________________________________________________

Bidder's Name:

________________________________________________________________________

Bidder's Address:

________________________________________________________________________

________________________________________________________________________

Mt. Wollaston Cemetery Improvements
Quincy, MA
2016-086

RIGHT-TO-KNOW LAW
00315-1
SECTION 00320
CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under this control, where segregated facilities are maintained. The Bidder certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments and that he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion or national origin, because of habit, local custom or otherwise. The Bidder agrees that (except where he has obtained identical certification from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000.00 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his file.

Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. ss.1001.

Date: __________________________, 2017

(Name of Bidder)

Official Address (including Zip Code) By:

______________________________

(Title)
SECTION 00325

AFFIDAVIT REGARDING PRIOR LABOR DISPUTES

The Bidder must execute and complete the following statements as to whether it has been the subject of, or otherwise been involved in, any labor dispute during the past five (5) years. If the Bidder has been the subject of, or otherwise been involved in any labor dispute during this period, the bidder must also provide a detailed description of each labor dispute, including the name and location of the project worked on, the nature of the dispute was resolved. For these purposes, "labor disputes" shall include picketing or any other activity which disrupted or delayed the work.

I ____________________________, being first duly sworn, do hereby depose/state:

   (Name)

1. I make each of the following statements with full authorization to bind
   ____________________________ to each of the representations made below.
   (Name of Bidder)

2. ____________________________ has/has not been involved in a labor dispute
   (Name of Bidder)

   as described above, within the past five (5) years.

3. (Complete only if bidder has been involved in dispute).
   The dispute(s) occurred on the following project(s). (Use separate sheet if necessary)
   Name and Location of Project Date Dispute Began Date Concluded
   a. ____________________________
   b. ____________________________

   Attach separate sheet and give full description of the nature of each dispute and an
   explanation of how it was resolved. (Please give a full description below, for each such
   dispute).

Signed under the penalty of perjury this ______________ day of _____________, 2017.

BY: ____________________________

on behalf of: ____________________________

(company name)
SECTION 00480

FORM OF NON-COLLUSIVE AFFIDAVIT
(AFFIDAVIT FOR BIDDER)

State of ____________________

County of ____________________

being first duly sworn, deposes and says,

That it is _______________________, the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or a sham; that said bidder has not colluded, conspired, connived or agreed directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of its bid or any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the Town of Saugus, Massachusetts, or any person interested in the proposed contract, and that all statements in said proposal or bid are true.

Signature of:

_____________________________ Bidder,

if bidder is an individual

_____________________________ Partner,

if bidder is a partnership

_____________________________ Officer,

if bidder is a Corporation

Subscribed and sworn to before me this _______ day of ____________, 2017.

_____________________________
Notary Public

My commission expires: _____________, 2017

END OF SECTION 00480
SECTION 00481

CERTIFICATE OF CORPORATE VOTE
(CORPORATION ONLY)

At a duly authorized meeting of the Board of Directors of ____________________________

held on ________________, it was VOTED that, ________________________________

__________________________ of this company, be and hereby is authorized to execute

__________________________ (Officer)

bidding, documents, contracts, and bonds in the name and on behalf of said company, and affix its
corporate seal hereto; and such execution of any contract or obligation in this company's name on its
behalf by such officer under seal of the company, shall be valid and binding upon this company.

I hereby certify that I am the clerk of the above named corporation and that
__________________________ is the duly elected officer as above of said company, and that the
above vote has not been amended or rescinded and remains in full force and effect as the date of this
contract.

__________________________ Clerk

__________________________ Date

Affix Corporate Seal

END OF SECTION 00481
SECTION 00482
CERTIFICATE AS TO PAYMENT OF STATE TAXES

Pursuant to M.G.L. Chapter 62C, Section 49A, I certify under the penalties of perjury that I, to the best of my knowledge and belief, have filed all state tax returns and paid all state taxes required under law.

__________________________________________
Social Security Number or Federal Identification Number

______________
Signature of Individual or Corporate Name

__________________________________________
By: _________________________________
   Corporate Officer (if applicable)

__________________________________________
Date: _________________________________

END OF SECTION 00482
SECTION 00500

AGREEMENT

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ARTICLE 2  ENGINEER

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ARTICLE 8  MISCELLANEOUS
SECTION 00500

AGREEMENT

THIS AGREEMENT is dated as of __________ day of __________ in the year 2017 by and between the City of Quincy, Massachusetts, acting by and through its Water Department, duly authorized therefore, who acts herein solely for said City and without personal liability to itself, (hereinafter called OWNER) and ______________ (hereinafter called CONTRACTOR).

OWNER AND CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is as described in SECTION 01010 SUMMARY OF WORK, and as shown on the plans.

The work done and materials and equipment furnished shall be strictly pursuant to and in conformity with the specifications and plans; said plans are signed and accompany this contract and these specifications, and are intended to complement each other. Any work appearing in or upon the one and not mentioned in the other shall be executed according to the true intent and meaning of said specifications and plans, the same as though the work was contained and described in all and as reasonably implied by the plans.

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described the completion of the Mt. Wollaston Cemetery Improvements Project.

ARTICLE 2. ENGINEER

The Project has been designed by Design Consultants Inc., 1495 Hancock Street, Suite 205, Quincy, Massachusetts 02169, who is hereinafter called ENGINEER and who is to act as OWNER’S representative, assume all duties and responsibilities, and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIMES

3.1 Contract duration for this project shall be 60 calendar days commencing on the date of Notice to Proceed.

3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER one thousand dollars ($1,000) for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete.

Mt. Wollaston Cemetery Improvements
Quincy, MA
2015-086

AGREEMENT
00500-2
ARTICLE 4. CONTRACT PRICE

The OWNER shall pay CONTRACTOR for completion of the work in accordance with the Contract Documents in current funds at the Contract Price agreed upon in the Bid Form attached to this Agreement:

Section 00300 BID FORM dated ________________. The total of the Bid Proposal accepted by the City is:

______________________________________________ dollars ($__________________________).

This amount includes all work described in Bid Items: __________.

ARTICLE 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1 For unit price bid items the product of the actual measured quantities suitably installed and accepted and the unit prices from the accepted bid proposal constitutes the extended total for payment. The extended total is the unit price times the quantity indicated. Adjustment of the unit price bid in the proposal will only be considered if the actual quantity is greater than 25% above or below the estimated quantity. For Lump Sum items suitability installed and completed the lump sum amount listed in the accepted bid proposal constitutes the total for payment.

5.2 Progress Payments; Retainage. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, and in accordance with the applicable Massachusetts General Law during construction. All such payments will be measured by the schedule of values established in paragraph 2.07 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

5.3 Progress payments will be made in an amount equal to 95 percent of Work completed (with the balance being retainage) but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.02.B.5 of the General Conditions.

5.4 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.06 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.07.

ARTICLE 6. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

6.1 CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 7) and the other related data identified in the Bidding Documents including "technical data."

Mt. Wollaston Cemetery Improvements
Quincy, MA
2015-086

AGREEMENT
00500-3
6.2 CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, performance, or furnishing of the Work.

6.3 CONTRACTOR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, performance, and furnishing of the Work.

6.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the General Conditions as provided in paragraph 4.02. CONTRACTOR accepts the determination set forth in Section 00700, paragraph 4.02 of the General Conditions of the extent of the "technical data" contained in such reports and drawings upon which CONTRACTOR is entitled to rely. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance, or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies, or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

6.5 CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.

6.6 CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports, and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

6.7 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 7. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

7.1 Invitation to Bid.

7.2 Instructions to Bidders.

Mt. Wollaston Cemetery Improvements
Quincy, MA
2015-086

AGREEMENT
00500-4
7.3 CONTRACTOR's Bid Proposal.
7.4 This Agreement.
7.5 Indemnity Agreement
7.6 Exhibits to this Agreement.
7.7 Performance, Payment, and other Bonds.
7.8 General Conditions EJCDC C-700, 2002 edition.
7.9 Supplementary Conditions.
7.10 Specifications and Appendices as listed in table of contents thereof.
7.11 Drawings dated May 15, 2017 with each sheet bearing the following general title:

Mt. Wollaston Cemetery Improvements
20 Sea Street
City of Quincy, MA

7.11 Addenda numbers ___ to _____, inclusive.

7.12 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraph 3.04 of the General Conditions.

ARTICLE 8. MISCELLANEOUS

8.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

8.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically, but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment with release or discharge the assignor from any duty or responsibility under the Contract Documents.

8.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

8.4 Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

Mt. Wollaston Cemetery Improvements
Quincy, MA
2015-086
AGREEMENT
00500-5
8.5 The Contractor shall not discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age, or national origin; and it shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, religion, color, sex, age, handicapped status, or national origin.
FOR AGREEMENT OF CONTRACT
ACKNOWLEDGMENT OF PRINCIPAL (IF A CORPORATION)

State of ____________________  SS: County of ________________

On this ___________ day of __________________, 2017, before me personally came and appeared ______________________ to me known, who being by me duly sworn, did depose and say that s/he resides at _______________________; that s/he is the ___________ of ______________________, the corporation described in and which executed the foregoing instrument; that s/he knows the seal of said corporation; that one of the impressions affixed to said instrument is an impression of said seal; that it was so affixed by order of the directors of said corporation, and that s/he signed his/her name hereto by like order.

(SEAL)

__________________________
(Notary Public)

ACKNOWLEDGMENT OF PRINCIPAL (IF A PARTNERSHIP)

State of ____________________  SS: County of ________________

On this ___________ day of __________________, 2017, before me personally came and appeared ______________________, to me known and known to me to be one of the members of the firm of ______________________ described in and who executed the foregoing instrument and s/he acknowledged to me that s/he executed the same as and for the act and deed of said firm.

(SEAL)

__________________________
(Notary Public)

Mt. Wollaston Cemetery Improvements
Quincy, MA
2015-086

AGREEMENT
00500-7
ACKNOWLEDGMENT OF PRINCIPAL (IF AN INDIVIDUAL)

State of ______________________ SS: County of ______________________

On this ______ day of ______________________, 2017, before me personally came and appeared ______________________ to me known and know to me to be the person described in and who executed the foregoing instrument and acknowledged that s/he executed the same.

______________________________
CONTRACTOR

*By: ______________________
   (Officer)

*IMPORTANT: Execute acknowledgment of officer or agent of contractor who signs this document.
IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed, by their duly authorized officials, this Agreement in seven (7) copies, each of which shall be deemed an original on the date noted below. The Party of the First Part agrees to pay the Party of the Second Part, upon satisfactory completion and delivery of the aforementioned, the sum of:

$ ________________________________
(amount in figures)

________________________________
(amount written in words)

WITNESS: 

By: __________________________________

Name: James Timmons

Title: City Solicitor

By: __________________________________

Name: Thomas Koch

Title: Mayor

By: __________________________________

Name: Paul Franz

Title: Director of Park and Forestry

By: __________________________________

Name: Kathryn R. Hobin

Title: Purchasing Agent

Contract No.: ________________________

P.O. No.: ________________________

Code: ________________________

Pursuant to M.G.L. c.44, s31C, I certify that an appropriation has been made in the total amount of the contract:

By: __________________________________

Name: Mark Cavanagh

Title: Director of Municipal Finance

Address: ________________________________

Mt. Wollaston Cemetery Improvements
Quincy, MA 2015-086

AGREEMENT  00500-9
END OF SECTION 00500
SECTION 00520

INDEMNITY AGREEMENT

In consideration for award of the **Mt. Wollaston Cemetery Improvements** project by the City of Quincy, hereinafter referred to as INDEMNITEE, to the CONTRACTOR/BIDDER:

_________________________ hereinafter referred to as INDEMNITOR, and for other good and valuable consideration, said INDEMNITOR agrees to hold INDEMNITEE, Town of Harwich, and its various departments and employees harmless from any and all liability, loss or damage that INDEMNITOR may suffer of claims, demands, costs, including attorneys fees, or judgement or other actions against it by reason of any and all work done by on behalf of the INDEMNITOR in connection with the above-referenced Contract.

**Principal:**

_________________________

By: ______________________

>Title) ____________________

(SEAL)

_________________________

Address

_________________________
A. CONTRACTOR'S CERTIFICATION

A Contractor will not be eligible for award of a contract unless he has submitted the following certification, which is deemed a part of the resulting contract.

certifies that:

1. it tends to use the following listed construction trades in the work under the contract:

2. will comply with the minority manpower ratio and specific affirmative action steps contained herein; and

3. will obtain from each of its subcontractors and submit to the contracting administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these bid conditions.

Contractor's Signature/Authorized Representative

B. SUBCONTRACTOR'S CERTIFICATION

Prior to the award of any subcontract, regardless of tier, the prospective subcontractor must execute and submit to the Prime Contractor the following certification, which will be deemed a part of the resulting subcontract.

certifies that:

1. it tends to use the following listed construction trades in work under the subcontract:

2. will comply with the minority manpower ratio and specific affirmative action steps contained herein.

Subcontractor's Signature

In order to ensure that said subcontractor's certification becomes a part of all subcontracts under the general contract, no subcontract shall be executed until an authorized representative of the state/municipal agency (or agencies) administering this project has determined, in writing, that said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval may be deemed invalid.

END OF SECTION 00520

Mt. Wollaston Cemetery Improvements
Quincy, MA
2016-086

INDEMNITY AGREEMENT
00520 -2
City of Quincy
City Solicitor's Office
1305 Hancock Street
Quincy, MA 02169

Attn: Mr. James Timmins, City Solicitor

RE: Mount Wollaston Cemetery Improvements
(Project Name)

Dear Mr. Timmins:

Please be advised that I have reviewed the statement on internal accounting controls prepared by/for ________________________________ (name of company), in connection with the above captioned project. This statement is required under Massachusetts General Laws, Chapter 30, Section 39R. In our opinion, representations of management are consistent with our evaluation of the system of internal accounting controls. In addition, we believe that they are reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the firm's financial statements.

Yours sincerely,

________________________________________
Certified Public Accountant

Note: This form is to be completed only when the contract exceeds $100,000 and is for the purchase of materials or for the construction, renovation, etc. of public works or public buildings.
CERTIFICATION

Internal Accounting

The Contractor certifies that it has internal accounting controls, as required by Chapter 30, Section 39R and that the Contractor will:

1. maintain accurate and detailed accounts for a six (6) year period after the final payment;

2. file regular statements of management concerning internal auditing controls;

3. file an annual audited financial statement; and

4. submit a statement from an independent certified public accountant that such CPA has examined management's internal auditing controls and expresses an opinion as to their consistency with management's statements in (2) above, and whether such statements are reasonable with respect to transactions and assets that are substantial in relation to designer's financial statements. General Laws, Chapter 7, Section 301 (e).

Signed under the pains and penalties of perjury:

______________________________
(Name of Company)

______________________________
(Authorized Signature)

Note: This form is to be completed only when the contract exceeds $100,000 and is for the purchase of materials or for the construction, renovation, etc. of public works or public buildings.
CERTIFICATE OF ACKNOWLEDGMENT OF CONTRACTOR
FOR AGREEMENT AND CONTRACT BONDS

State of __________________________   } Fed. Tax ID # _______________________
County of _________________________

On this _________ day of ________________, 20____, before me personally appeared
______________________________, who
being by me duly sworn, did depose and say as follows:

That he is ___________________________ in the firm of ____________________________
(position in the firm)

______________________________, that said firm consists
(name of firm)

of _______________________________
(name of principals in firm and positions)

__________________________________

that he executed the foregoing instruments on behalf of said firm for the uses and purposes stated
herein. If a corporation, that the seal affixed to the foregoing instrument is such corporate seal and it
was so affixed by order of the Board of Directors of said corporation, and that by like order, he
signed thereto his name and official designation.

______________________________  Seal
Notary Public

My commission expires: ________________
FORM OF INSURANCE CERTIFICATE

Note: This form may be substituted with Standard Forms issued by Insurance Agent.

CERTIFICATE OF INSURANCE

This is to certify that the ___________________________ (Company) has issued the policies listed below, that these policies are written in accordance with the Company's standard policies and endorsements, except as indicated below or as noted in the attachments herewith, which policies and endorsements will be made available to ENGINEER and OWNER UPON request, that they provide coverage and limits of liability shown with respect to the insurance indicated that they are in force on this date, that all deductible amounts are indicated below, and that this Certificate is furnished in accordance with and for the purpose of satisfying the requirements of OWNER and ENGINEER in connection with the award and performance of a contract or agreement between

(OWNER), and

Name of Insured

Address of Insured

Location and Description of Work

Project Contract No.

Coverage and Limits of Liability
(at least as shown below)

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<tr>
<th>Bodily Injury Liability</th>
<th>Property Damage Liability</th>
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<tbody>
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<td>$1,000,000. $1,000,000. $1,000,000. $1,000,000.</td>
<td></td>
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</table>

Policy Date Effective Date Expiration Date Each Occurrence Each Aggregate Number Occurrence Aggregate

A. Owner's Protective Liability has been issued at the expense of Above Insured to

Owner.

B. Comprehensive General Liability


Property Damage Insurance under policies A & B above includes Coverage for Explosion, Collapse and Underground Property Damage.

C. Auto Liability


Each Person Accident $1,000,000. $1,000,000. $1,000,000. $1,000,000.

D. Workmen's Compensation

Coverage B Limits $1,000,000. if applicable

E. Builder's Risk Insurance - All Risk Completed Value

As called for in Contract or Agreement

CONTRACTUAL LIABILITY

CONTRACTOR shall at all times indemnify and save harmless OWNER, ENGINEER and their respective officers, agents and employees on account of any and all claims, damages, losses, litigation, expenses, counsel fees and compensation arising out of injuries (including death) sustained by or alleged to have been sustained by the officers, agents and employees of said OWNER or ENGINEER or of CONTRACTOR, his subcontractors, or material men, and from injuries (including death sustained by or alleged to have been sustained by the public, any or all persons on or near the Work, or by any other person or property, real or personal (including property of said OWNER or ENGINEER caused in whole or in part by the acts, omissions, or neglect of CONTRACTOR including but not limited to any neglect in safeguarding the work or through the use of unacceptable materials in contracting the Work by CONTRACTOR, any subcontractor, material man, or anyone directly or indirectly employed by them or any of them while engaged in the performance of the contract, including the entire elapsed time from the date ordered to start work or the actual start, whichever occurs first, until completion of the one year correction period, as certified by OWNER or ENGINEER.

Policies A, B, C & D shall remain in effect during the one year correction period.

Such insurer as is herein certified applies to all operations of the insured in connection with, and necessary and incidental to, the work herein described at the locations stated.

It is hereby understood and agreed that the above policies will not be restricted, suspended, materially changed, nor canceled without 15 days advance notice by registered mail to OWNER and ENGINEER.

Authorized Representative Signature

Address

00545-1
NOTICE OF AWARD

TO: __________________________________________
___________________________________________
___________________________________________

PROJECT DESCRIPTION: Mt. Wollaston Cemetery Improvements Project

The Owner has considered the Proposal submitted by you for the above described Work on ____________, 2017 in response to its Advertisement for Bids and Instructions to Bidders.

You are hereby notified that your Proposal has been accepted for Items totaling the amount of $______________.

You are required by the Instructions to Bidders to execute the Contract Agreement and furnish the required Contractor's Performance Bond, Payment Bond, and certificates of insurance and within ten (10) days from the date of this Notice of Award.

If you fail to execute said Agreement and to furnish said Bonds and Insurance within ten (10) days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Proposal as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner. Dated this ______ day of ________________, 2017.

By Its Director of Park and Forestry:

_________________________________________    ____________________________
Paul Franz                                      Date

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged, this, the ___________ day of ________________, 2017.

By: _________________________________________

Title: __________________________________________

Mt. Wollaston Cemetery Improvements
Quincy, MA
2016-086
NOTICES
00550-1
NOTICE TO PROCEED

To:                        Date:________________________, 2017

PROJECT DESCRIPTION: Mt. Wollaston Cemetery Improvements Project

You are hereby notified to commence the Work in accordance with the Agreement dated ________________, on or before ________________, and you are to complete all work within sixty (60) consecutive calendar days thereafter. The date of completion of all work is, therefore, ________________________.

City of Quincy, Massachusetts

By: _______________________
    Paul Franz
    Title: Director of Park and Forestry

END OF SECTION 00550
SECTION 00610
CONSTRUCTION PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS,

That we, __________________________________________, organized under the laws of the State of ______________________, and having a usual place of business in ______________________, as principals, and ______________________, organized under the laws of the State of ______________________, and having a usual place of business in ______________________, as surety, are are holden and stand firmly bound and obligated unto the City of Quincy, Massachusetts, as obligee, in the sum of __________________________________ ($ __________) Dollars, lawful money of the United States of America, to and for the true payment whereof, we hereby bind ourselves, and each of us, our heirs, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said principal has, by means of a written agreement, dated __________, entered into a contract with the said obligee for the Mt. Wollaston Cemetery Improvements, a copy of which agreement is attached hereto and by reference, made a part hereof.

NOW, THEREFORE, the conditions of this obligation is such that if the said principal shall well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of said contract on his part to be kept and performed, during the original term of said contract and any extensions thereof that may be granted by the City of Quincy, Massachusetts 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 be null and void; otherwise it shall be and remain in full force, virtue and effect.

In the event that the work under said contract is abandoned by the principal, or is terminated by the City of Quincy, Massachusetts under the provisions of sections of said Contract, said surety hereby further agrees that said surety shall, if requested in writing by the City of Quincy, Massachusetts, take such action as is necessary to complete the work under said contract. And the said surety, for value received, hereby stipulates and agrees that no change in. or extension of time, alteration, or addition to
the terms of the contract or to the work to be performed thereunder, or to the Specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the Specifications.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of __________ in the year Two Thousand and Seventeen.

Important: Attach herewith proof of authority of officers or agents to sign Bond.

**Principal:**

By: ____________________________

(Title) ____________________________

(SEAL)

Address

---

**Surety:**

By: ____________________________

(Title) ____________________________

(SEAL)

Telephone Number

Fax Number

END OF SECTION 00610
SECTION 00620
CONSTRUCTION PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS,

That we, ____________________________, organized under the laws of the State of ___________ and having a usual place of business in ______________________, as principal, and
__________________ organized under the laws of the State of ________________ and having a usual place of
business in ______________________, as surety, are holden and stand firmly bound unto the City of Quincy,
Massachusetts as obligee, in the sum of ____________________________ ($_______________)
Dollars lawful money of the United States of America, to and for the true payment whereof, we hereby bind
ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these
presents.

WHEREAS, the said principal has, by means of a written agreement, dated __________
entered into a contract with the said obligee for the Mt. Wollaston Cemetery Improvements project, a
copy of which agreement is attached hereto and by reference made a part hereof.

NOW THEREFORE, The conditions of this obligation is such that if the principal shall pay for all
labor performed or furnished and for all materials used or employed in said contract and in any and all duly
authorized modifications, alterations, extensions of time, changes or additions to said contract that may
hereafter be made, notice to the surety of such modifications, alterations, extensions of time, changes or
additions being hereby waived, then this obligation shall be null and void; otherwise it shall be and remain
in full force, virtue and effect.
IN WITNESS WHEREOF, the above-bounded parties have hereunto set our hands and seals this _______ day of _____________ in the year Two Thousand Seventeen.

Important: Attach herewith proof of authority of officers or agents to sign Bond.

PRINCIPAL: ____________________________________________
          ____________________________ By: ____________________________
          (Title) ____________________________ (Title) ____________________________

SURETY: ____________________________________________
          ____________________________ By: ____________________________
          (Title) ____________________________ (Title) ____________________________

END OF SECTION 00620
STANDARD
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
da practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by

The Associated General

Contractors of America

Construction Specifications Institute

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2) (1996 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC User's Guide (No. 1910-50). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17) (1996 Edition).


02/18/05
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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

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

2. Agreement--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.

3. Application for Payment--The form acceptable to ENGINEER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. Asbestos--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. Bid--The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. Bidding Documents--The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

7. Bidding Requirements--The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.

8. Bonds--Performance and payment bonds and other instruments of security.

9. Change Order--A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. Claim--A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. Contract--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

* 12. Contract Documents--The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR’s Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER’s written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.

13. Contract Price--The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).

14. Contract Times--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER’s written recommendation of final payment.

15. CONTRACTOR--The individual or entity with whom OWNER has entered into the Agreement.


17. Drawings--That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other CONTRACTOR submittals are not Drawings as so defined.

18. Effective Date of the Agreement--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which

* See Supplementary Conditions
the Agreement is signed and delivered by the last of the two parties to sign and deliver.

* 19. ENGINEER—The individual or entity named as such in the Agreement.

* 20. ENGINEER’s Consultant—An individual or entity having a contract with ENGINEER to furnish services as ENGINEER’s independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

21. Field Order—A written order issued by ENGINEER which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

22. General Requirements—Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. Hazardous Environmental Condition—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. Hazardous Waste—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

25. Laws and Regulations; Laws or Regulations—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. Liens—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

27. Milestone—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

28. Notice of Award—The written notice by OWNER to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.

29. Notice to Proceed—A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.

** 30. OWNER—The individual, entity, public body, or authority with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be performed.

31. Partial Utilization—Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

32. PCBs—Polychlorinated biphenyls.

33. Petroleum—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

34. Project—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.

35. Project Manual—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. Radioactive Material—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

37. Resident Project Representative—The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.

38. Samples—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. Shop Drawings—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

40. Site—Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.

* 41. Specifications—That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

42. Subcontractor—An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.

* See Supplementary Conditions

** See Supplementary Conditions 17.08
43. Substantial Completion—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.

44. Supplementary Conditions—That part of the Contract Documents which amends or supplements these General Conditions.

45. Supplier—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

46. Underground Facilities—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

47. Unit Price Work—Work to be paid for on the basis of unit prices.

48. Work—The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

49. Work Change Directive—A written statement to CONTRACTOR issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

50. Written Amendment—A written statement modifying the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms “as allowed,” “as approved,” or terms of like effect or import are used, or the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of ENGINEER as to the Work, it is intended that such action or determination will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.10 or any other provision of the Contract Documents.

B. Day

1. The word “day” shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

C. Defective

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.04 or 14.05).

D. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or
equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, "provide" is implied.

E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01  Delivery of Bonds

A. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish.

2.02  Copies of Documents

A. OWNER shall furnish to CONTRACTOR up to ten copies of the Contract Documents. Additional copies will be furnished upon request at the cost of reproduction.

2.03  Commencement of Contract Times; Notice to Proceed *

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04  Starting the Work

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05  Before Starting Construction

A. CONTRACTOR’s Review of Contract Documents: Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or reasonably should have known thereof.

B. Preliminary Schedules: Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for its timely review:

1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and

3. a preliminary schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

* C. Evidence of Insurance—Before any Work at the Site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER, respectively, are required to purchase and maintain in accordance with Article 5.

2.06  Preconstruction Conference

A. Within 20 days after the Contract Times start to run, but before any Work at the Site is started, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.05.B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07  Initial Acceptance of Schedules

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.05.B. CONTRACTOR shall have an additional

* See Supplementary Conditions

** See Supplementary Conditions 17.08
ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER.

1. The progress schedule will be acceptable to ENGINEER if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR’s full responsibility therefore.

2. CONTRACTOR’s schedule of Shop Drawing and Sample submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.

3. CONTRACTOR’s schedule of values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

* A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to OWNER.

C. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in Article 9.

3.02 Reference Standards

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be effective to assign to OWNER, ENGINEER, or any of ENGINEER’s Consultants, agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.04; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

* See Supplementary Conditions 00700 - 10 ** See Supplementary Conditions 17.08
3.04 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways: (i) a Written Amendment; (ii) a Change Order; or (iii) a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways: (i) a Field Order; (ii) ENGINEER’s approval of a Shop Drawing or Sample; or (iii) ENGINEER’s written interpretation or clarification.

3.05 Reuse of Documents

A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with OWNER: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER’s Consultant, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaption by ENGINEER. This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

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

4.01 Availability of Lands

A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR of any encumbrances or restrictions not of general application but specifically related to use of the Site with which CONTRACTOR must comply in performing the Work. OWNER will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CONTRACTOR and OWNER are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in OWNER’s furnishing the Site, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

B. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER’s interest therein as necessary for giving notice of or filing a mechanic’s or construction lien against such lands in accordance with applicable Laws and Regulations.

C. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 Subsurface and Physical Conditions

* A. Reports and Drawings: The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Contract Documents.

B. Limited Reliance by CONTRACTOR on Technical Data Authorized: CONTRACTOR may rely upon the general accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER, or any of ENGINEER’s Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

4.03 Differing Subsurface or Physical Conditions

A. Notice: If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any “technical data” on which CONTRACTOR is entitled to rely as provided in paragraph 4.02 is materially inaccurate; or

* See Supplementary Conditions 00700 - 11 ** See Supplementary Conditions 17.08
2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

**

B. ENGINEER’s Review: After receipt of written notice as required by paragraph 4.03.A, ENGINEER will promptly review the pertinent condition, determine the necessity of OWNER’s obtaining additional exploration or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER’s findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR’s cost of, or time required for, performance of the Work; subject, however, to the following:

   a. such condition must meet any one or more of the categories described in paragraph 4.03.A; and

   b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.08 and 11.03.

2. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times if:

   a. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

   b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR’s making such final commitment; or

   c. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.03.A.

3. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in paragraph 10.05. However, OWNER, ENGINEER, and ENGINEER’s Consultants shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.04 Underground Facilities

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities, including OWNER, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:

   a. reviewing and checking all such information and data,

   b. locating all Underground Facilities shown or indicated in the Contract Documents,

   c. coordination of the Work with the owners of such Underground Facilities, including OWNER, during construction, and

   d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with

* See Supplementary Conditions 00700 - 12 ** See Supplementary Conditions 17.08
reasonable accuracy in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility.

2. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, OWNER or CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

4.05 Reference Points

A. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER'S judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 Hazardous Environmental Condition at Site

A. Reports and Drawings: Reference is made to the Supplementary Conditions for the identification of those* reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the ENGINEER in the preparation of the Contract Documents.

B. Limited Reliance by CONTRACTOR on Technical Data Authorized: CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER or any of ENGINEER'S Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. CONTRACTOR shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.

D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by paragraph 6.16); and (iii) notify OWNER and ENGINEER (and promptly thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. CONTRACTOR shall not be required to resume Work in connection with such condition or in any affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the

* See Supplementary Conditions 00700 - 13 ** See Supplementary Conditions 17.08
amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, either party may make a Claim therefor as provided in paragraph 10.05.

F. If after receipt of such written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.F shall obligate OWNER to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.F shall obligate CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

A. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Contract Documents.

B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.01.B, CONTRACTOR shall within 20 days thereafter substitute another Bond and surety, both of which shall comply with the requirements of paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 Certificates of Insurance

A. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain.

* See Supplementary Conditions

** See Supplementary Conditions 17.08
5.04 CONTRACTOR’s Liability Insurance

A. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR’s performance of the Work and CONTRACTOR’s other obligations under the Contract Documents, whether it is to be performed by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers’ compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR’s employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR’s employees;

4. claims for damages sustained by reasonably available personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance so required by this paragraph 5.04 to be purchased and maintained shall:

* 1. with respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER’s Consultants, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering CONTRACTOR’s indemnity obligations under paragraphs 6.07, 6.11, and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter). *

5.05 OWNER’s Liability Insurance

A. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.04, OWNER, at OWNER’s option, may purchase and maintain at OWNER’s expense OWNER’s own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

5.06 Property Insurance

A. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER’s Consultants, and any other

* See Supplementary Conditions 00700 - 15  ** See Supplementary Conditions 17.08
individuals—or entities—identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an additional insured;

2. be written on a Builder’s Risk “all-risk” or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, materials and equipment in transit, and shall insure against all the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER;

5. allow for partial utilization of the Work by OWNER;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR, and ENGINEER with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER’s Consultants, and any other individuals or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.07.

D. OWNER shall not be responsible for purchasing and maintaining any property insurance specified in this paragraph 5.06 to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by CONTRACTOR, Subcontractors, or others suffering any such loss; and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser’s own expense.

E. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraph 5.06, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the Site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.07 Waiver of Rights

A. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraph 5.06 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER’s Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER’s Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

* See Supplementary Conditions 00700 - 16
** See Supplementary Conditions 17.08
B. OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER’s Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them.

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to OWNER’s property or the Work caused by, arising out of, or resulting from fire or other peril whether or not insured by OWNER; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.05, after Substantial Completion pursuant to paragraph 14.04, or after final payment pursuant to paragraph 14.07.

C. Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against CONTRACTOR, Subcontractors, ENGINEER, or ENGINEER’s Consultants and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them.

5.08 Receipt and Application of Insurance Proceeds

* A. Any insured loss under the policies of insurance required by paragraph 5.06 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.08.B. OWNER shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no such agreement as the parties in interest may reach. If no such agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

* B. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to OWNER’s exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurer in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.

5.09 Acceptance of Bonds and Insurance; Option to Replace

* A. If either OWNER or CONTRACTOR has any objection to the coverage afforded by or other provisions of the Bond or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by paragraph 2.05.C. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party’s interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 Partial Utilization, Acknowledgment of Property Insurer

A. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR’S RESPONSIBILITIES

6.01 Supervision and Superintendence

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of OWNER or ENGINEER in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

* See Supplementary Conditions 00700 - 17

** See Supplementary Conditions 17.08
At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent thereto who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the Site and shall have authority to act on behalf of CONTRACTOR. All communications given to or received from the superintendent shall be binding on CONTRACTOR.

6.02 Labor; Working Hours

A. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out, and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday, or any legal holiday without OWNER's written consent (which will not be unreasonably withheld) given after prior written notice to ENGINEER.

6.03 Services, Materials, and Equipment

A. Unless otherwise specified in the General Requirements, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 Progress Schedule

A. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.07 as it may be adjusted from time to time as provided below.

1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.07) proposed adjustments in the progress schedule that will not result in changing the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.05 Substitutes and "Or-Equals"

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below.

1. "Or-Equal" Items: If in ENGINEER’s sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment ENGINEER determines that: (i) it is at least equal in quality, durability, appearance, strength, and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and;

b. CONTRACTOR certifies that: (i) there is no increase in cost to the OWNER; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items
a. If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

c. The procedure for review by ENGINEER will be as set forth in paragraph 6.05.A.2.d, as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances.

d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use. The application shall certify that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the proposed substitute item will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item.

B. Substitute Construction Methods or Procedures:
If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.05.A.2.

C. Engineer's Evaluation: ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.05.A and 6.05.B. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until ENGINEER's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." ENGINEER will advise CONTRACTOR in writing of any negative determination.

D. Special Guarantee: OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

E. ENGINEER's Cost Reimbursement: ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.05.A.2 and 6.05.B and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER approves a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute.

F. CONTRACTOR's Expense: CONTRACTOR shall provide all data in support of any proposed substitute or "or-equal" at CONTRACTOR's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

A. CONTRACTOR shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to OWNER as indicated in paragraph 6.06.B), whether initially or as a replacement, against whom OWNER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to OWNER in advance for acceptance by OWNER by a specified date prior to the Effective Date of the Agreement, and if CONTRACTOR has submitted a list thereof in accordance
with the Supplementary Conditions, OWNER’s acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

C. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as CONTRACTOR is responsible for CONTRACTOR’s own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier, or other individual or entity, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR.

E. CONTRACTOR shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with ENGINEER through CONTRACTOR.

** F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.06, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER’s Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.07 Patent Fees and Royalties

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER’s Consultants, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 Permits

** A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto, such as plant investment fees.

6.09 Laws and Regulations

A. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations,
neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR’s compliance with any Laws or Regulations.

B. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work; however, it shall not be CONTRACTOR’s primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR’s obligations under paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in paragraph 10.05.

** 6.10 Taxes

A. CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

** 6.11 Use of Site and Other Areas

A. **Limitation on Use of Site and Other Areas

1. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER’s Consultant, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER, or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR’s performance of the Work.

B. Removal of Debris During Performance of the Work: During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work CONTRACTOR shall clean the Site and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. Loading Structures: CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 Record Documents

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to ENGINEER for OWNER.

6.13 Safety and Protection

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property referred to in paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 Safety Representative

A. CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 Hazard Communication Programs

A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 Shop Drawings and Samples

A. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show ENGINEER the services, materials, and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.17.E.

B. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.17.E. The numbers of each Sample to be submitted will be as specified in the Specifications.

C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER as required by paragraph 2.07, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

D. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

   a. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

* See Supplementary Conditions 00700 - 22
** See Supplementary Conditions 17.08
b. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto; and

d. CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR’s obligations under the Contract Documents with respect to CONTRACTOR’s review and approval of that submittal.

3. At the time of each submittal, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

E. ENGINEER’s Review

* 1. ENGINEER will timely review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER. ENGINEER’s review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. ENGINEER’s review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. ENGINEER’s review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER’s attention to each such variation at the time of each submittal as required by paragraph 6.17.D.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.17.D.1.

F. Resubmittal Procedures

1. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.18 Continuing the Work

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.04 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.19 CONTRACTOR’s General Warranty and Guarantee

A. CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER’s Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR’s warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or

2. normal wear and tear under normal usage.

B. CONTRACTOR’s obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR’s obligation to perform the Work in accordance with the Contract Documents:

1. observations by ENGINEER;

* See Supplementary Conditions 00700 - 23

** See Supplementary Conditions 17.08
2. recommendation by ENGINEER or payment by OWNER of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereto by OWNER;

4. use or occupancy of the Work or any part thereof by OWNER;

5. any acceptance by OWNER or any failure to do so;

6. any review and approval of a Shop Drawing or Sample Submittal or the issuance of a notice of acceptability by ENGINEER;

7. any inspection, test, or approval by others;

8. any correction of defective Work by OWNER.

6.20 Indemnification

* A. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER’s Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage:

1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers’ compensation acts, disability benefit acts, or other employee benefit acts.

* C. The indemnification obligations of CONTRACTOR under paragraph 6.20.A shall not extend to the liability of ENGINEER and ENGINEER’s Consultants or to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

ARTICLE 7 - OTHER WORK

7.01 Related Work at Site

A. OWNER may perform other work related to the Project at the Site by OWNER’s employees, or let other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to CONTRACTOR prior to starting any such other work; and

2. if OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in paragraph 10.05.

B. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the other work with OWNER’s employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under

* See Supplementary Conditions 00700 - 24

** See Supplementary Conditions 17.08
this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

C. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent defects and deficiencies in such other work.

7.02 Coordination

A. If OWNER intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility for such coordination.

ARTICLE 8 - OWNER’S RESPONSIBILITIES

8.01 Communications to Contractor

A. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.02 Replacement of ENGINEER

A. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer to whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.03 Furnish Data

A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

8.04 Pay Promptly When Due

A. OWNER shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.02.C and 14.07.C.

8.05 Lands and Easements; Reports and Tests

A. OWNER’s duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to OWNER’s identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by ENGINEER in preparing the Contract Documents.

8.06 Insurance

* A. OWNER’s responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 Change Orders

A. OWNER is obligated to execute Change Orders as indicated in paragraph 10.03.

8.08 Inspections, Tests, and Approvals

A. OWNER’s responsibility in respect to certain inspections, tests, and approvals is set forth in paragraph 13.03.B.

8.09 Limitations on OWNER’s Responsibilities

A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR’s failure to perform the Work in accordance with the Contract Documents.

8.10 Undisclosed Hazardous Environmental Condition

A. OWNER’s responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in paragraph 4.06.

8.11 Evidence of Financial Arrangements

A. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER’s obligations under the Contract Documents, OWNER’s

* See Supplementary Conditions

** See Supplementary Conditions 17.08
responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER’S STATUS DURING CONSTRUCTION

9.01 OWNER’S Representative

A. ENGINEER will be OWNER’s representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER’s representative during construction are set forth in the Contract Documents and will not be changed without written consent of OWNER and ENGINEER.

* 9.02 Visits to Site

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR’s executed Work. Based on information obtained during such visits and observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER’s efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER’s visits and observations are subject to all the limitations on ENGINEER’s authority and responsibility set forth in paragraph 9.10, and particularly, but without limitation, during or as a result of ENGINEER’s visits or observations of CONTRACTOR’s Work ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

9.03 Project Representative

A. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.10 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the Site who is not ENGINEER’s Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 Clarifications and Interpretations

A. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, a Claim may be made therefor as provided in paragraph 10.05.

** 9.05 Authorized Variations in Work

A. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, who shall perform the Work involved promptly. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefor as provided in paragraph 10.05.

9.06 Rejecting Defective Work

A. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.07 Shop Drawings, Change Orders and Payments

A. In connection with ENGINEER’s authority as to Shop Drawings and Samples, see paragraph 6.17.

B. In connection with ENGINEER’s authority as to Change Orders, see Articles 10, 11, and 12.

C. In connection with ENGINEER’s authority as to Applications for Payment, see Article 14.

9.08 Determinations for Unit Price Work

* See Supplementary Conditions 00700 - 26

** See Supplementary Conditions 17.08
A. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding (except as modified by ENGINEER to reflect changed factual conditions or more accurate data) upon OWNER and CONTRACTOR, subject to the provisions of paragraph 10.05.

9.09 Decisions on Requirements of Contract Documents and Acceptability of Work

A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, and Claims seeking changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing, in accordance with the provisions of paragraph 10.05, with a request for a formal decision.

B. When functioning as interpreter and judge under this paragraph 9.09, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to this paragraph 9.09 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.07.A) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter.

9.10 Limitations on ENGINEER's Authority and Responsibilities

A. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

C. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this paragraph 9.10 shall also apply to ENGINEER's Consultants, Resident Project Representative, and assistants.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 Authorized Changes in the Work

A. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If OWNER and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in paragraph 10.05.

10.02 Unauthorized Changes in the Work

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

10.03 Execution of Change Orders

A. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

* See Supplementary Conditions 00700 - 27
** See Supplementary Conditions 17.08
1. changes in the Work which are: (i) ordered by OWNER pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under paragraph 13.08.A or OWNER's correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.18.A.

10.04 Notification to Surety

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.05 Claims and Disputes

A. Notice: Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to ENGINEER and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. Notice of the amount or extent of the Claim, dispute, or other matter with supporting data shall be delivered to the ENGINEER and the other party to the Contract within 60 days after the start of such event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of such Claim, dispute, or other matter). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to ENGINEER and the claimant within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).

B. ENGINEER's Decision: ENGINEER will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. ENGINEER's written decision on such Claim, dispute, or other matter will be final and binding upon OWNER and CONTRACTOR unless:

1. an appeal from ENGINEER's decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16; or

2. if no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within 30 days after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by OWNER and CONTRACTOR), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If ENGINEER does not render a formal decision in writing within the time stated in paragraph 10.05.B, a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

* See Supplementary Conditions

** See Supplementary Conditions 17.08
D. No Claim for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this paragraph 10.05.

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

11.01 Cost of the Work

A. Costs Included — The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen, and other personnel employed full-time at the Site. Payroll costs for employees not employed full-time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes; workers’ compensation; health and retirement benefits; bonuses; sick leave; vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours on Saturday, Sunday, or legal holidays, shall be included in the extent authorized by OWNER.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and supplies required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds in CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

3. Payments made by CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER, who will then determine, with the advice of ENGINEER, which bids, if any, will be acceptable. If any subcontract-provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor’s Cost of the Work and fee shall be determined in the same manner as CONTRACTOR’s Cost of the Work and fee as provided in this paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR’s employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER and the costs of transportation, loading, unloading, assembling, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

e. Deposits lest for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the perfor-
mane of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR’s fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items in connection with the Work.

i. When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.

j. When all the Work is performed on the basis of cost plus, the costs of premiums for all bonds and insurance required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of CONTRACTOR’s officers, executives, principals (of partnerships and sole proprietors), general managers, engineers, architects, estimators, attorneys, actuaries, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR’s principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the CONTRACTOR’s fee.

2. Expenses of CONTRACTOR’s principal and branch offices other than CONTRACTOR’s office at the Site.

3. Any part of CONTRACTOR’s capital expenses, including interest on CONTRACTOR’s capital employed for the Work and charges against CONTRACTOR for delinquent payments.

4. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment, wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.

C. CONTRACTOR’s Fee: When all the Work is performed on the basis of cost plus, CONTRACTOR’s fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, CONTRACTOR’s fee shall be determined as set forth in paragraph 12.01.C.

D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A and 11.01.B, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

11.02 Cash Allowances

A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. CONTRACTOR’s costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

B. Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work.

* See Supplementary Conditions 00700 - 30 ** See Supplementary Conditions 17.08
Work an amount equal to the sum of the unit price for each separately identified item of Unit-Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit-Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit-Price Work performed by CONTRACTOR will be made by ENGINEER subject to the provisions of paragraph 9.08.

B. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR’s overhead and profit for each separately identified item.

C. OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Price in accordance with paragraph 10.08 if:

1. the quantity of any item of Unit-Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

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

12.01 Change of Contract Price

**

A. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.08.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually-agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreed to a lump sum is not reached under paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in paragraph 12.01) plus a CONTRACTOR’s fee for overhead and profit (determined as provided in paragraph 12.01.C).

C. CONTRACTOR’s Fee — The CONTRACTOR’s fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

   a. for costs incurred under paragraphs 11.01.A.1 and 11.01.A.2, the CONTRACTOR’s fee shall be 15 percent;

   b. for costs incurred under paragraph 11.01.A.3, the CONTRACTOR’s fee shall be five percent;

   c. where one or more tiers of subcontracts are on the basis of cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01.A.1 and 11.01.A.2; and that any higher-tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

   d. no fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

   e. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR’s fee by an amount equal to five percent of such net decrease; and

   f. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR’s fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.3 through 12.01.C.5, inclusive.

* See Supplementary Conditions 00700 - 31 ** See Supplementary Conditions 17.08
12.02  Change of Contract Times

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on written notice submitted by the party making the claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. Any adjustment of the Contract Times (or Milestones) covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones) will be determined in accordance with the provisions of this Article 12.

12.03  Delays Beyond CONTRACTOR's Control

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delays beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in paragraph 12.02.A. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

12.04  Delays Within CONTRACTOR’s Control

A. The Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05  Delays Beyond OWNER’s and CONTRACTOR’s Control

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR’s sole and exclusive remedy for such delay.

12.06  Delay Damages

A. In no event shall OWNER or ENGINEER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. delays caused by or within the control of CONTRACTOR; or

2. delays beyond the control of both OWNER and CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

B. Nothing in this paragraph 12.06 bars a change in Contract Price pursuant to this Article 12 to compensate CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inactions of OWNER or anyone for whom OWNER is responsible.

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

13.01  Notice of Defects

A. Prompt notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02  Access to Work

A. OWNER, ENGINEER, ENGINEER’s Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR’s Site safety procedures and programs so that they may comply therewith as applicable.

13.03  Tests and Inspections

A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by paragraphs 12.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.B; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other

* See Supplementary Conditions 00700 - 32
** See Supplementary Conditions 17.08
representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval.

D. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to OWNER and ENGINEER.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

F. Uncovering Work as provided in paragraph 13.03.E shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

A. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

B. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

13.05 OWNER May Stop the Work

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by ENGINEER, remove it from the Project and replace it with Work that is not defective. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.07 Correction Period

* A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for CONTRACTOR's use by OWNER or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) repair such defective land or areas; or (ii) correct such defective Work or, if the defective Work has been rejected by OWNER, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all

* See Supplementary Conditions 00700 - 33 ** See Supplementary Conditions 17.08
costs of repair or replacement of work of others) will be
paid by CONTRACTOR.

B. In special circumstances where a particular item of
equipment is placed in continuous service before Substantial
Completion of all the Work, the correction period for that
item may start to run from an earlier date if so provided in
the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work
resulting therefrom) has been corrected or removed and
replaced under this paragraph 13.07, the correction period
hereunder with respect to such Work will be extended for an
additional period of one year after such correction or
removal and replacement has been satisfactorily completed.

D. CONTRACTOR’s obligations under this
paragraph 13.07 are in addition to any other obligation or
warranty. The provisions of this paragraph 13.07 shall not
be construed as a substitute for or a waiver of the provisions
of any applicable statute of limitation or repose.

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and
replacement of defective Work, OWNER (and, prior to
ENGINEER’s recommendation of final payment,
ENGINEER) prefers to accept it, OWNER may do so.
CONTRACTOR shall pay all Claims, costs, losses, and
damages (including but not limited to all fees and charges of
engineers, architects, attorneys, and other professionals and
all court or arbitration or other dispute resolution costs)
attributable to OWNER’s evaluation of and determination to
accept such defective Work (such costs to be approved by
ENGINEER as to reasonableness) and the diminished value
of the Work to the extent not otherwise paid by
CONTRACTOR pursuant to this sentence. If any such
acceptance occurs prior to ENGINEER’s recommendation
of final payment, a Change Order will be issued
incorporating the necessary revisions in the Contract
Documents with respect to the Work, and OWNER shall be
entitled to an appropriate decrease in the Contract Price,
reflecting the diminished value of Work so accepted. If the
parties are unable to agree as to the amount thereof,
OWNER may make a Claim therefor as provided in
paragraph 10.05. If the acceptance occurs after such
recommendation, an appropriate amount will be paid by
CONTRACTOR to OWNER.

13.09 OWNER May Correct Defective Work

* A. If CONTRACTOR fails within a reasonable time
after written notice from ENGINEER to correct defective
Work or to remove and replace rejected Work as required
by ENGINEER in accordance with paragraph 13.06.A, or if
CONTRACTOR fails to perform the Work in accordance
with the Contract Documents, or if CONTRACTOR fails
to comply with any other provision of the Contract
Documents, OWNER may, after seven days written notice
to CONTRACTOR, correct and remedy any such
deficiency.

B. In exercising the rights and remedies under this
paragraph, OWNER shall proceed expeditiously. In
connection with such corrective and remedial action,
OWNER may exclude CONTRACTOR from all or part of
the Site, take possession of all or part of the Work and
suspend CONTRACTOR’s services related thereto, take
possession of CONTRACTOR’s tools, appliances,
construction equipment and machinery at the Site, and incorporate
in the Work all materials and equipment stored at the
Site or for which OWNER has paid CONTRACTOR but
which are stored elsewhere. CONTRACTOR shall allow
OWNER, OWNER’s representatives, agents and employees,
OWNER’s other contractors, and ENGINEER and
ENGINEER’s Consultants access to the Site to enable
OWNER to exercise the rights and remedies under this
paragraph.

C. All Claims, costs, losses, and damages (including
but not limited to all fees and charges of engineers,
architects, attorneys, and other professionals and all court or
arbitration or other dispute resolution costs) incurred or
sustained by OWNER in exercising the rights and remedies
under this paragraph 13.09 will be charged against CON-
TRACTOR, and a Change Order will be issued incorpor-
ating the necessary revisions in the Contract Documents
with respect to the Work; and OWNER shall be entitled to
an appropriate decrease in the Contract Price. If the parties
are unable to agree as to the amount of the adjustment,
OWNER may make a Claim therefor as provided in
paragraph 10.05. Such claims, costs, losses and damages
will include but not be limited to all costs of repair, or
replacement of work of others destroyed or damaged by
correction, removal, or replacement of CONTRACTOR’s
defective Work.

D. CONTRACTOR shall not be allowed an extension
of the Contract Times (or Milestones) because of any delay
in the performance of the Work attributable to the exercise
by OWNER of OWNER’s rights and remedies under this
paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND
COMPLETION

14.01 Schedule of Values

A. The schedule of values established as provided in
paragraph 2.07.A will serve as the basis for progress
payments and will be incorporated into a form of Applica-
tion for Payment acceptable to ENGINEER. Progress
payments on account of Unit Price Work will be based on
the number of units completed.

14.02 Progress Payments

A. Applications for Payments

1. At least 20 days before the date established
for each progress payment (but not more often than
once a month), CONTRACTOR shall submit to
ENGINEER for review an Application for Payment
filled out and signed by CONTRACTOR covering

* See Supplementary Conditions
00700 - 34
** See Supplementary Conditions 17.08
the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect OWNER's interest therein, all of which must be satisfactory to OWNER.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied on account to discharge CONTRACTOR's legitimate obligations associated with prior Applications for Payment.

* 3. The amount of retention with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications

** 1. ENGINEER will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

2. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's observations on the Site of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.08, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

3. By recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents; or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

4. Neither ENGINEER's review of CONTRACTOR's Work for the purposes of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work. Additionally, said review or recommendation will not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any Liens.

5. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.02.B.2. ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Written Amendment or Change Orders;

* See Supplementary Conditions 00700 - 35  ** See Supplementary Conditions 17.08
c. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.09; or

d. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A.

C. Payment Due

* 1. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of paragraph 14.02.D) become due, and when due will be paid by OWNER to CONTRACTOR.

**

D. Reduction in Payment

1. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

   a. claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work;

   b. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens;

   c. there are other items entitling OWNER to a set-off against the amount recommended; or

   d. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.02.B.5.a through 14.02.B.5.c or paragraph 15.02.A.

2. If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

3. If it is subsequently determined that OWNER'S refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

14.03 CONTRACTOR's Warranty of Title

* A. CONTRACTOR warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Promptly thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within 14 days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER'S objections, ENGINEER considers the Work substantially complete, ENGINEER will within said 14 days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER'S issuing the definitive certificate of Substantial Completion, ENGINEER'S aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

B. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

* See Supplementary Conditions 00700 - 36 ** See Supplementary Conditions 17.08
14.05 Partial Utilization

A. Use by OWNER at OWNER's option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER, and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.

1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

2. No occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of paragraph 5.10 regarding property insurance.

14.06 Final Inspection

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will promptly make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 Final Payment

A. Application for Payment

1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.04.B.7; (ii) consent of the surety, if any, to final payment; and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

B. Review of Application and Acceptance

** 1. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application for Payment to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise,
ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to OWNER of the Application for Payment and accompanying documentation, the amount recommended by ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

14.08 Final Completion Delayed

A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR’s final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by OWNER against CONTRACTOR, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR’s continuing obligations under the Contract Documents; and

2. a waiver of all Claims by CONTRACTOR against OWNER other than those previously made in writing which are still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 OWNER May Suspend Work

** A. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes a Claim therefor as provided in paragraph 10.05.

15.02 OWNER May Terminate for Cause

A. The occurrence of any one or more of the following events will justify termination for cause:

1. CONTRACTOR’s persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.07 as adjusted from time to time pursuant to paragraph 6.04);

2. CONTRACTOR’s disregard of Laws or Regulations of any public body having jurisdiction;

3. CONTRACTOR’s disregard of the authority of ENGINEER; or

4. CONTRACTOR’s violation in any substantial way of any provisions of the Contract Documents.

* B. If one or more of the events identified in paragraph 15.02A occur, OWNER may, after giving CONTRACTOR (and the surety, if any) seven days written notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site, and take possession of the Work and of all CONTRACTOR’s tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by OWNER arising out of or relating to completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses, and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and, when so approved by ENGINEER, incorporated in a Change Order. When exercising any rights or remedies

* See Supplementary Conditions 00700 - 38

** See Supplementary Conditions 17.08
under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

C. Where CONTRACTOR’s services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.03 OWNER May Terminate For Convenience

A. Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items):

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. for reasonable expenses directly attributable to termination.

B. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 CONTRACTOR May Stop Work or Terminate

A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within 30 days after it is submitted, or OWNER fails for 30 days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in paragraph 15.03. In lieu of terminating the Contract and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within 30 days after it is submitted, or OWNER has failed for 30 days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may, seven days after written notice to OWNER and ENGINEER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.04 are not intended to preclude CONTRACTOR from making a Claim under paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR’s stopping the Work as permitted by this paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 Methods and Procedures

A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of paragraphs 9.09 and 10.05, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17 - MISCELLANEOUS

17.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 Survival of Obligations

* See Supplementary Conditions 00700 - 39
** See Supplementary Conditions 17.08
A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Agreement.

17.05 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

* See Supplementary Conditions

** See Supplementary Conditions 17.08
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SUPPLEMENTARY CONDITIONS

AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. 1910-8, 1996 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE 1. DEFINITIONS AND TERMINOLOGY

Add the following language at the beginning of definition 1.01 A.12 entitled "Contract Documents" in the General Conditions:

"The Advertisement for Bids, Instructions to Bidders, State Regulations, ..."

Delete the words "The individual or entity named as such in the Agreement" in 1.01 A.19, "Engineer", and insert the following in their place:

"The individual or entity duly appointed by the Owner to undertake the duties and powers herein assigned to the Engineer, acting either directly or through duly appointed representatives."

Delete the words "and who is identified as such in the Supplementary Conditions" at the end of definition 1.01 A.20, entitled "ENGINEER'S Consultant."

Delete definition 1.01 A.41 entitled "Specifications" in the General Conditions in its entirety and insert the following in its place:

"Sections included under Division 1 through Division 15 of the Contract Documents."

ARTICLE 2. PRELIMINARY MATTERS

SC-2.02

Delete paragraph 2.02A of the General Conditions in its entirety and insert the following in its place:

"A. OWNER shall furnish to CONTRACTOR one (1) paper copy of the Contract Documents."

SC-2.03

Add paragraph 2.03B:

Notwithstanding the time limitations provided in paragraph 2.03A, the OWNER may desire to commence the Contract Times later than the sixtieth day after the bid opening. The OWNER and CONTRACTOR, upon mutual agreement, may extend the commencement of the Contract Times to

08/11/2016

00800-2
any date that they elect. OWNER must obtain CONTRACTOR’s approval for extending the time beyond the dates/times stated in the Contract Documents.

SC-2.05

Delete paragraph 2.05C of the General Conditions in its entirety and insert the following in its place:

“C. Evidence of Insurance: CONTRACTOR shall deliver to OWNER, with a copy to the ENGINEER, Certificates of Insurance within 10 days after receipt of the notice of the acceptance of bid (and other evidence requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with the requirements of Article 5.”

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01

Add the following sentence at the end of Paragraph 3.01A of the General Conditions:

"...by all. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.”

ARTICLE 4. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

SC-4.02

Delete the term “Supplementary Conditions” of paragraph 4.02A of the General Conditions and replace it with “Contract Documents”.

SC-4.04

Change “of” to “or” on line 6 of paragraph 4.04B.2 of the General Conditions.

Delete the following words from lines 8 and 9 of paragraph 4.04B.2 of the General Conditions:

"...or not shown or indicated with reasonable accuracy...”

SC-4.05

Add a new paragraph immediately after paragraph 4.05A of the General Conditions which is to read as follows:

"B. ENGINEER may check the lines, elevations and reference marks set by CONTRACTOR, and CONTRACTOR shall correct any errors disclosed by such check. Such a check shall
not be considered as approval of CONTRACTOR's work and shall not relieve CONTRACTOR of the responsibility for construction of the entire Work in accordance with the Contract Documents. CONTRACTOR shall furnish personnel to assist ENGINEER in checking lines and grades."

ARTICLE 5. BONDS AND INSURANCE

NOTICE TO CONTRACTOR:

1. Proof of Insurance coverage shall be furnished to the OWNER in accordance with the schedule for submittal of Bonds and Agreements.

2. Additionally refer to Article 2. PRELIMINARY MATTERS, Paragraph SC-2.05.C

SC-5.01

Insert these sentences following SC-5.01.A: The Surety Company providing the bonds shall have a rating of A or better within the Best Key Rating Guide and be licensed by the Massachusetts Division of Insurance. The CONTRACTOR shall pay the premiums for such Bonds.

SC-5.03

Delete the second sentence in paragraph 5.03A of the General Conditions, which begins "OWNER shall deliver to...."

SC-5.04

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

5.04 A.1 and 5.04 A.2 Workers' Compensation.

<table>
<thead>
<tr>
<th>(1) Worker's Compensation per</th>
<th>Statutory Requirements</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$100,000/$500,000/$100,000</td>
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</table>

5.04 A.3, 5.04 A.4 and 5.04 A.5 Commercial General Liability Limits shall include coverage for Independent Contractors (also known as Owners and Contractors Protective Liability), explosion, collapse and underground hazard coverage (XCU), broad form property damage, blanket contractual liability and products/completed operations. The general aggregate limits shall be endorsed so that they respond on a per project and per location basis.

Limits:

$1,000,000 each occurrence

$2,000,000 general aggregate

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$2,000,000 products/completed operations aggregate

5.04 A.6 Automobile Liability for owned, hired and non-owned vehicles:

(1) Bodily injury: $1,000,000 Combined single limit

(2) Property damage $1,000,000 Combined single limit

Revise the beginning of paragraph 5.04B.1 to read as follows:

“with respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.5 inclusive and paragraph 5.04.C, include as additional insureds…”

Delete paragraph 5.04.B.5 in its entirety and insert the following in its place:

“5. contains a provision that notice of cancellation of insurance be delivered in accordance with policy provisions. In addition, the CONTRACTOR and/or its insurance broker/agent shall immediately notify the OWNER and ENGINEER should any insurance coverage be cancelled. The CONTRACTOR shall immediately stop work on the Project and shall not resume work until the CONTRACTOR provides evidence, to the OWNER and ENGINEER, in the form of an acceptable insurance certificate, of new insurance coverage that replaces all cancelled coverage that is required for the Project.”

Add two new paragraphs immediately after paragraph 5.04B of the General Conditions which are to read as follows:

“C. The CONTRACTOR shall also provide:

1. CONTRACTOR shall, as a minimum, purchase and maintain excess liability insurance in the umbrella form with a combined single limit of not less than $5,000,000 per occurrence and in the aggregate. Evidence of such excess liability shall be delivered to OWNER in accordance with paragraph 2.05C in the form of a certificate indicating the policy numbers and limits of liability of all underlying insurance.

   A. General Liability, Workers' Compensation, Automobile Liability and Umbrella Liability Policies will contain waivers of subrogation in favor of the Engineer and Owner.

   2. If the aggregate limits of liability indicated in CONTRACTOR’ insurance provided in accordance with paragraphs 5.03 and 5.04 are not sufficient to cover all claims for damages arising from his operations under this Contract and from any other work performed by him or if the commercial general liability insurance policy of insurance does not provide that the general aggregate limits apply on a per project and per location basis, CONTRACTOR shall have the policy amended so that the aggregate
limits of liability required by this Contract will be available to cover all claims for damages due to operations under this Contract."

SC-5.05

Delete paragraph 5.05 of the General Conditions in its entirety.

SC-5.06

Delete Paragraph 5.06 A of the General Conditions in its entirety.
Delete paragraph 5.06B of the General Conditions in its entirety.
Delete Paragraph 5.06C of the General Conditions in its entirety.
Delete paragraph 5.06D of the General Conditions in its entirety.
Delete paragraph 5.06E of the General Conditions in its entirety.

SC-5.07

Amend the last sentence of paragraph 5.07A of the General Conditions by striking out the words "held by OWNER as trustee or." As so amended, paragraph 5.07A remains in effect.

SC-5.08

Delete paragraph 5.08A of the General Conditions in its entirety.
Delete paragraph 5.08B of the General Conditions in its entirety.

SC-5.09

Delete paragraph 5.09A of the General Conditions in its entirety and insert the following in its place:

"A. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with this Article 5 on the basis of its not complying with the Contract Documents, OWNER will notify CONTRACTOR in writing thereof within thirty days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.05C. CONTRACTOR will provide such additional information in respect of insurance provided by him as OWNER may reasonably request."

ARTICLE 6. CONTRACTOR'S RESPONSIBILITIES

SC-6.01

08/11/2016 00800-6
Delete paragraph 6.01B of the General Conditions in its entirety and replace with the following:

"B. At the site of the Work the CONTRACTOR shall employ a full-time construction superintendent or foreman who 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 will be continued in the capacity for the particular job involved unless the representative ceases to be on the CONTRACTOR's payroll. If at any time during the Work the representative is deemed by the ENGINEER to be no longer acceptable, the representative shall be promptly replaced by the CONTRACTOR. All communications to the superintendent or foreman shall be as binding as if given to the CONTRACTOR."

SC-6.04

Add the following paragraph after paragraph 6.04A.2 of the General Conditions:

"B. The CONTRACTOR's resident superintendent shall attend monthly progress meetings at the site of the work with the ENGINEER and others as appropriate to review schedule status and such other pertinent subjects as may be listed on the agenda by the ENGINEER."

SC-6.05

Revise the second sentence of Paragraph A to read as follows:

"Unless the specification indicates that a proprietary item is called for, other items of material or equipment or material or equipment of other suppliers may be submitted to ENGINEER for review under the circumstances described below, and in accordance with MGL c.30, s.39M."

SC-6.17

In paragraph 6.17 E.1 of the General Conditions, delete the word “timely” from the first line.

SC-6.20

Delete paragraph 6.20A of the General Conditions in its entirety and replace with the following:

"A. To the fullest extent permitted by law, the CONTRACTOR shall indemnify and hold harmless the OWNER, the ENGINEER, ENGINEER's consultants, and any of their officers, directors, employees, agents, affiliates, subsidiaries and partners from and against all claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by acts or omissions of the CONTRACTOR, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall apply to any such claims, damages, losses and expenses which arise and/or
are incurred by any person or entity either during the performance of the Work and/or after completion of construction. Nothing in this paragraph shall be construed to negate, abridge, or reduce other rights or obligations of indemnity or contribution which would otherwise exist as to a party or person indemnified hereunder. CONTRACTOR hereby assumes the responsibility and liability for injury to or death of any and all persons, including the CONTRACTOR's employees, and for any and all damage to property caused by, resulting from, or arising out of any act, omission or neglect on the part of the CONTRACTOR, or of any Subcontractor or of anyone directly or indirectly employed by any of them or of anyone for whose acts, any of them may be liable. The Contractor hereby acknowledges its obligation under the foregoing paragraph to indemnify the Engineer and Owner against judgments suffered because of the contractor's work and to assume the cost of defending the Engineer and Owner against claims as described in the foregoing paragraph."

Delete paragraph 6.20C of the General Conditions in its entirety.
Insert the following after the first sentence on paragraph 9.10B:

"However, the ENGINEER shall have the right to direct the CONTRACTOR to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto."

ARTICLE 11. COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

Delete Article 11 of the General Conditions in its entirety and replace with the following:

"A. The unit price of an item of Unit Price work shall be subject to reevaluation and adjustment under the following conditions:

(1) If the total extended bid price [Estimated Quantity times the Bid Unit Price] of a particular item of Unit Price Work amounts to 5 percent or more of the Original Contract Price and the variation in the quantity of the particular item of Unit Price Work performed by CONTRACTOR differs by more than 15 percent from the estimated quantity of such item indicated in the Agreement;

and

(2) If there is no corresponding adjustment with respect to any other item of work; and

(3) If CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed. If OWNER believes that the quantity variation entitles OWNER to an adjustment in the unit price, OWNER shall be entitled to an adjustment in the unit price in an amount determined by the ENGINEER. ENGINEER shall not be liable in connection with any determination relating to adjustments which is rendered in good faith."

ARTICLE 12. CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.01

Delete paragraph 12.01 in its entirety.

SC-12.06

Add the following new paragraphs after paragraph 12.06 of the General Conditions:

"12.07 Liquidated Damages:
A. If the CONTRACTOR shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the OWNER, then the CONTRACTOR does hereby agree, as a part consideration for the awarding of this Contract, to pay to the OWNER the amount specified in the Contract, 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 completing the work. Such damages may be retained from time to time by the OWNER from progress payments or any amounts owing to the CONTRACTOR, or otherwise collected.

B. The said amount is fixed and agreed upon by and between the CONTRACTOR and the OWNER because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the OWNER would in such event sustain, and 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 periodical estimates.

C. It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein as definite and certain length of times if fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided that the CONTRACTOR shall not be charged with liquidated damages of any excess cost when the OWNER determines that the CONTRACTOR is without fault and the CONTRACTOR's reasons for the time extension are acceptable to the OWNER; Provided, further, that the CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

1) to any preference, priority or allocation order duly issued by the Government;

2) to unforeseeable cause beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and

3) to any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections C (1) and C (2) above;

D. Provided, further, that the CONTRACTOR shall, within thirty (30) days from the beginning of such delay, unless the OWNER shall grant a further period of time prior to the date of final settlement of the Contract, notify the OWNER, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the CONTRACTOR within a reasonable time of its decision in the matter.

ARTICLE 13. TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK
Delete paragraph 13.07A of the General Conditions and insert the following in its place:

“A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) correct such defective work, or, if it has been rejected by OWNER, remove it from the site and replace it with work that is not defective, and (ii) satisfactorily correct or remove and replace any damage to other work or the work of others therefrom. If CONTRACTOR does not begin the repairs within ten (10) days of receipt of written notification and promptly comply with the terms of OWNER's written instructions, or in an emergency where delay would cause serious risk, loss or damage, OWNER may have the defective work corrected or the rejected work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.”

Revise paragraph 13.09A of the General Conditions

A. Delete the word “seven” and replace it with the word “ten” so that it reads “after ten days written notice to CONTRACTOR.”

ARTICLE 14. PAYMENTS TO CONTRACTOR AND COMPLETION

Delete paragraph 14.02A.3 and insert the following in its place:

"3. Retainage with respect to progress payments will be five percent or, if stipulated, the maximum allowed by law.""

Add Paragraph 4. to read as follows:

“4. The CONTRACTOR shall submit Weekly Payroll Records Report and Statement of Compliance verifying compliance with the Minimum Prevailing Wage Law, MGL ch. 149, Sections 26-27H. These Statements of Compliance shall be submitted as a condition of payment for work performed during the period the reports apply.”

Delete paragraph 14.03A in its entirety and insert the following in its place:
"A. CONTRACTOR warrants and guarantees that title to all work, material and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than at the time of Application for Payment free and clear of all liens. CONTRACTOR shall provide written transfer of title and a certified paid invoice provided by the supplier."

ARTICLE 15. SUSPENSION OF WORK AND TERMINATION

SC-15.02

Add a new paragraph immediately after paragraph 15.02 A.4 of the General Conditions which is to read as follows:

"5. If the Work to be done under this Contract shall be abandoned, or if this Contract or any part thereof shall be sublet, without the previous written consent of OWNER, or if the contract or any claim thereunder shall be assigned by CONTRACTOR otherwise than as herein specified;"

ARTICLE 17. MISCELLANEOUS

SC-17.06, 17.07, 17.08, 17.09

Add the following new paragraphs after paragraph 17.05 of the General Conditions:

"17.06 Assignment:

A. The CONTRACTOR shall not assign the whole or any part of this Contract or any moneys due or to become due hereunder until thirty (30) days prior notice in writing has been given to the OWNER of the intention to assign, which notice shall state the identity and address of the prospective assignee. No assignment shall be made without the OWNER's prior written consent. Such consent shall not be unreasonably withheld. In case the CONTRACTOR assigns all or any part of the moneys due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the CONTRACTOR shall be subject to prior claims of all persons, firms and corporations of services rendered or materials supplied for the performance of the work called for in this Contract.”

17.07 Liability

It is understood and agreed that members of the OWNER or the ENGINEER or any agent or employees of the OWNER signing this Agreement shall not be personally liable hereunder for any action incurred in connection with this Agreement.

17.08 State Statutes and Regulations

See Section 00850 for further modifications of the General Conditions due to state statutes and regulations.

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17.09 Severability

If any provision of this Agreement shall be invalid or unenforceable to any extent or in any application, then the remainder of this Agreement and of such terms and conditions, except to such extent or in such application, shall not be affected thereby, and each and every term and condition of this Agreement shall be valid and enforced to the fullest extent and in the broadest application permitted by law."

END OF SECTION
SUPPLEMENTARY CONDITIONS - PART II

ARTICLE 1  STATUTORY REQUIREMENTS IN GENERAL

1.1 The Contractor shall keep himself fully informed of all existing and future State and Federal Laws and Municipal Ordinances and Regulations in any manner affecting those engaged or employed in the work or in any way affecting the conduct of the work, and of all such orders and decrees of bodies or tribunals having jurisdiction or authority over same and of all provisions required by law to be made a part of this contract, all of which provisions are hereby incorporated by reference and made a part thereof. If any discrepancy or inconsistency is discovered in the drawings or specifications or contract documents for this work in relation to any such law, ordinance, regulation, order or decree, he shall forthwith report the same to the Engineer in writing. He shall at all times himself observe and comply with, and shall cause all his agents and employees to observe and comply with, all such existing and future laws, ordinances, regulations, orders and decrees; and he shall protect and indemnify the City and Engineer and all of its and their officers, agents and servants against any claim of liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees or sub-contractors.

1.2 All materials furnished and work done are to comply with all State, Federal and local laws and regulations.

1.3 All applicable laws, ordinances, and rules and regulations of all authorities having jurisdiction over the construction of the project shall apply to the contract throughout.

ARTICLE 2  DELETED

ARTICLE 3  DELETED

ARTICLE 4  SAFETY AND HEALTH REGULATIONS

4.1 The Successful Bidder shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 (PS-91-569) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL-91-54).

4.2 This project is subject to the Safety and Health Regulations of the Massachusetts Department of Labor and Industries, Division of Industrial Safety "Rules and Regulations for the Prevention of Accidents in Construction Operations (Chapter 454 CMR, 10.0 et. seq.)".

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

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

4.5 All excavations within public or private ways are subject to the requirements of the Massachusetts General Law, Acts of 1983, Chapter 353, included in Part II of the Supplementary Conditions.

ARTICLE 5 PERMITS AND LICENSES

5.1 Deleted

5.2 The Contractor shall procure all permits and licenses required, pay all charges and fees therefore, and shall give all notices necessary and incidental to the due and lawful prosecution of the Project. The cost thereof shall be included in the prices bid for the various items listed in the proposal.

The permits shall also include all building and other permits required for his equipment, work force or particular operations (such as blasting or local street opening permits), in the performance of the work.

ARTICLE 6 CHANGE ORDERS

6.1 Change Orders will be completed by the Contractor using the form enclosed on the following page. The City will not accept any other form as a substitute.
City of Quincy, Massachusetts  
Purchasing Department  
1305 Hancock Street, Quincy, MA 02169  

CHANGE ORDER/AMENDMENT #_______

Made in Quintuplicate this day (DATE)____________________ between the City of Quincy, Massachusetts, a Municipal Corporation, within the County of Norfolk, Party of the first part and:(print name & address of Company below) party of the second part.

WITNESSETH: That for and in consideration of the following mutual covenants contained herein the parties agree to amend Contract #__________________ Of the City of Quincy, dated ________________________________ between the same parties as follows:

ARTICLE I: In Article I, we are INCREASING/DECREASING the Contract by $__________________ Because: (list below reason) Justification: (Attached - Refer to Page 2)

ARTICLE II: In Article II of the Contract, for (SPECIFY COMMODITY) __________________________ between the same parties, strike out the words and figures: $__________________

____________________________________________________________________

AMOUNT IN WORDS and substitute the words and figures: $__________________

____________________________________________________________________

AMOUNT IN WORDS

WITNESS:

____________________________________________________________________

CITY OF QUINCY

____________________________________________________________________

MAYOR

____________________________________________________________________

CITY SOLICITOR

____________________________________________________________________

CITY AUDITOR

____________________________________________________________________

PURCHASING AGENT

____________________________________________________________________

DEPT:__________________

P.O. #:__________________

CODE:__________________

Sufficient funds are available to cover this change order in the contract account to be charged.

____________________________________________________________________

VENDOR SIGNATURE

____________________________________________________________________

COMMISSIONER OF PUBLIC WORKS

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ARTICLE 7
SUPPLEMENTARY CONDITIONS - COMMONWEALTH OF MASSACHUSETTS
INDEX

All Mass. General Laws listed below are deemed inserted by reference in this contract. It is understood that the latest amendments to these laws shall also be inserted by reference.

1. METHOD OF PAYING SUBCONTRACTORS
   MGL C. 30; s. 39F

2. METHOD OF PAYING GENERAL CONTRACTORS - COMPLETION OF PUBLIC WORKS: SEMI-FINAL AND FINAL ESTIMATES: PAYMENTS: EXTRA WORK: DISPUTED ITEMS
   MGL C. 30, s. 39G

3. CLAIMS FOR UNFORESEEN CONDITIONS
   MGL C.30, s. 39N

4. CLAIMS FOR DELAY
   MGL C.30, s. 39O

5. DECISIONS AND APPROVALS BY ENGINEER OR ARCHITECT
   MGL C 30, s. 39P

6. PREFERENCE IN EMPLOYMENT, WAGES
   MGL C.149, s.26

7. HOURS OF WORK
   MGL C.149, s.34

8. WORK BY FOREIGN CORPORATIONS
   MGL C.30, s. 39L

9. MINIMUM WAGE RATES
   MGL C. 149, s. 26-27D

10. RECORD KEEPING
    MGL C. 30, S. 39R

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ARTICLE 8

THE COMMONWEALTH OF MASSACHUSETTS
&
CITY OF QUINCY

SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY
ANTI-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

I. For purposes of this contract, "minority" refers to Asian-Americans, Blacks, Spanish Surnamed Americans, North American Indians, and Cape Verdians. "Commission" refers to the Massachusetts Commission Against Discrimination.

II. During the performance of this contract, the contractor and all of his subcontractors (hereinafter collectively referred to as the Contractor), for himself, his assignees and successors in interest, agree as follows:

1. In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age or sex. The aforesaid provision shall include, but not be limited to the following: employment upgrading, demotion or transfer, recruitment advertising, recruitment layoff, termination, rates of pay or other forms of compensation, conditions or privileges of employment, and selection for apprenticeship. The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Commission setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (M.G.L. Chapter 151B).

2. In connection with the performance of work under this Contract, the Contractor shall undertake in good faith affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age or sex. A purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future Commonwealth public construction projects.
III. 1. As part of his obligation of remedial action under the foregoing section, the Contractor shall maintain on this project a not less than 10% ratio of minority employee man hours to total man hours in each job category including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers, and those "classes of work" enumerated in Section 44C of Chapter 149 of the Massachusetts General Laws.

2. In the hiring of minority journeymen, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi-employer affirmative action program approved by the Commission, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one time, designated by the Liaison Committee or the Commission.

IV. 1. At the discretion of the Commission there may be established for the life of this contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering this project, hereinafter called the administering agency, the Commission and such other representatives as may be designated by the Commission in conjunction with the administering agency.

2. The Contractor (or his agent, if any, designated by him as the on-site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

3. The Contractor shall prepare projected manning tables on a quarterly basis. These shall be broken down into projections, by week, or workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and also when updated to the Commission and Liaison Committee.

4. Records of employment referral orders, prepared by the Contractor, shall be made available to the Commission and to the Liaison Committee on request.

5. The Contractor shall prepare weekly reports in a form approved by the Commission of hours worked in each trade by each employee, identified as minority or non-minority. Copies of these shall be provided at the end of each such week to the Commission and to the Liaison Committee.

V. If the Contractor shall use any subcontractor on any work performed under this contract, he shall take affirmative action to negotiate with qualified minority subcontractors. This affirmative action shall cover both pre-bid and post-bid periods. It shall include modification
to the Office of Minority Business Assistance (within the Executive Office of Communities and Development) or its designee, while bids are in preparation, of all products, work or services for which the Contractor intends to negotiate bids.

VI. In the employment of journeymen, apprentices, trainees and advanced trainees, the Contractor shall give preference, first, to citizens of the Commonwealth who have served in the armed forces of the United States in time of war and have been honorably discharged therefrom or released from active duty therein, and who are qualified to perform the work to which the employment related, and, secondly, to citizens of the Commonwealth generally, and, if such cannot be obtained in sufficient numbers, then to citizens of the United States.

VII. A designee of the commonwealth and a designee of the Liaison Committee shall each have right of access to the construction site.

VIII. Compliance with Requirements

The Contractor shall comply with the provision of Executive Order No. 74 as amended by Executive Order No.116 dated May 1, 1975, and of Chapter 151B, as amended, of the Massachusetts General Laws, both of which are herein incorporated by referenced and made a part of this contract.

IX. Non-Discrimination

The Contractor, in the performance of all work after award, and prior to completion of the contract work, will not discriminate on grounds of race, color, religious creed, national origin, age or sex in employment practices in the selection or retention of subcontractors, or in the procurement of materials and rentals of equipment.

X. Solicitations for Sub-Contracts, and for the Procurement of Materials and Equipment

In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this Contract relative to non-discrimination and affirmative action.

XI. Bidders Certification Requirement

1. The bidders certification form currently in use will be deleted from all future bid documents.

2. The following certification statement will be inserted in the bid document just above

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the bidder's signature, as a substitute for the present bidder certification form.

"The bidder hereby certifies he shall comply with the minority manpower ratio and specific action steps contained in the appendix EEO attached hereto, including compliance with the minority contractor compliance specified in Section V of said appendix. The contractor receiving the award of the contract shall be required to obtain from each of its subcontractors and submit to the contacting or administering agency prior to the performance of any work under said contract a certification by said subcontractor, regardless of tier that it will comply with the minority manpower ratio and specific affirmative action steps contained in the appendix EEO.

XII. Contractor's Certification

The Contractor's certification form must be signed by all successful low-bidder(s) prior to award by the contracting agency.

XIII. Compliance-Information, Reports and Sanctions

1. The Contractor will provide all information and reports required by the administering agency or the Commission on instructions issued by either of them and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the Commission to affect the employment of personnel. This provision shall apply only to information pertinent to the Commonwealth's supplementary affirmative action contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the administering agency or the Commission as appropriate and shall set forth what efforts he has made to obtain the information.

2. Whenever the administering agency, the Commission, or the Liaison Committee believes the General Contractor or any Subcontractor may not be operating in compliance with the terms of this Section, the Commission directly, or through its designated agent, shall conduct an appropriate investigation, and may confer with the parties, to determine if such Contractor is operating in compliance with the terms of this Section. If the Commission or its agent finds the General Contractor or any subcontractor not in compliance, it shall make a preliminary report on non-compliance, and notify such Contractor in writing of such steps as will in the judgement of the Commission or its agent bring such Contractor into compliance. In the event that such Contractor fails or refuses to fully perform such steps, the Commission or its agent shall make a final report of non-compliance, and recommend to the administering agency the imposition of one or more of the sanctions listed below. If, however, the Commission believes the General Contractor or any Subcontractor has taken or is taking every possible measure to achieve
compliance, it shall not make a final report of non-compliance. Within fourteen days of the receipt of the recommendations of the Commission, the administering agency shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement:

a. The recovery by the administering agency from the General Contractor of 1/100 of 1% of the contract award price or $1,000, whichever sum is greater, in the nature of liquidated damages or, if a subcontractor is in non-compliance, the recovery by the administering agency from the General Contractor, to be assessed by the General Contractor as a back charge against the Subcontractor, of 1/10 of 1% of the subcontract price, or $400, whichever is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply;

b. The suspension of any payment or part thereof due under the contract until such time as the General Contractor or any Subcontractor is able to demonstrate his compliance with the terms of the contract;

c. The termination, or cancellation of the contract, in whole or in part, unless the General Contractor or any Subcontractor is able to demonstrate within a specified time his compliance with the terms of the contract;

d. The denial to the General Contractor or any Subcontractor of the right to participate in any future contracts awarded by the administering agency for a period of up to three years.

3. If at any time after the imposition of one or more of the above sanctions a Contractor is able to demonstrate that he is in compliance with this Section, he may request the administering agency, in consultation with the Commission, to suspend the sanctions conditionally, pending a final determination by the Commission as to whether the Contractor is in compliance. Upon final determination of the Commission, the administering agency, based on the recommendation of the Commission, shall either lift the sanctions or reimpose them.

4. Sanctions enumerated under Sections XII-2 shall not be imposed by the administering agency except after an adjudicatory proceeding, as that term is used M.G.L. c.30A, has been conducted. No investigation by the Commission or its agent shall be initiated without prior notice to the Contractor.

XIV. **Severability**

The provisions of this section are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not
affect or impair any of the remaining provisions.

301. CMR 50.00: AFFIRMATIVE ACTION

Section

50.01: Declaration of Policy
50.02: Purpose and Scope
50.03: Definitions
50.04: Employment Policies of Agencies Within EOA
50.05: State Services and Facilities
50.06: Eligibility for Financial Assistance
   (301 CMR 50.07 and 50.08: RESERVED)
50.09: Construction Projects Conducted by Agencies
50.10: Construction Projects Conducted by Grantees
   (301 CMR 50.11 through 50.13: RESERVED)
50.14: Compliance and Sanctions
50.15: Severability
50.16: Appendix 1. Executive Order 74 (as amended and revised by Executive Order 116) the Governor's Code of Fair Practices.
50.19: Appendix 4. Fair Housing Guidelines
50.20: Appendix 5. Memorandum of Agreement
50.21: Appendix 6. Goals and Timetables Adopted Pursuant to the Department of Labor's Regulations 41 CFR 60-4.6

50.01: Declaration of Policy

(1) Non-discrimination and equal opportunity are the policy of the Executive Office of Environmental Affairs in all of its decisions, programs and activities. To that end, all agency employees shall rigorously take affirmative steps to ensure equality of opportunity in the internal affairs of all agencies as well as in their relations with the public, including those persons and organizations doing business with any agency of the Executive Office of Environmental Affairs. Each agency, in discharging its decisions, programs and activities shall have in meeting the goal of equality of opportunity.

(2) Affirmative action requires more than vigilance in the elimination of discriminatory barriers on the grounds of race, color, creed, national origin, age, and sex. It must also entail positive and aggressive measures to ensure equal opportunity in internal personnel practices and in those
programs which can affect persons and political subdivisions outside of state government. This affirmative action shall include efforts necessary to remedy the effects of present and past discriminatory patterns and practices and any action necessary to guarantee equal opportunity for all people.

(3) All agencies shall initiate affirmative action programs designed to conform to this policy. All such affirmative action programs shall be subject to review by the Executive Office of Administration and Finance, or such other Office or person as may be designated by the Governor, and the Massachusetts Commission Against Discrimination, as provided in 301 CMR 50.16 (Appendix 1, Executive Order 74, as amended by Executive Order No. 116, the Governor's Code of Fair Practice).

(4) All powers, functions and duties granted to the Secretary of Environmental Affairs under any provision of law shall be construed liberally for the accomplishment of these regulations.

These regulations establish the procedures by which the Executive Office of Environmental Affairs and all its agencies shall comply with the policy and requirements for equal employment opportunity and affirmative action.

**50.10 Construction Projects Conducted by Grantees**

(1) Before any applicant receives any financial assistance, including state assisted or federally assisted construction grants awarded under any program administered by an agency, the Secretary must have determined that such applicant is in compliance with the Equal Employment Opportunity Guidelines and Fair Housing Guidelines of the Commission, as they may be amended from time to time (301 CMR 50.18 Appendix 3 and 50.19 Appendix 4 of these regulations) according to the procedures set forth in 301 CMR 50.06 of these regulations.

(2) Every state or state-assisted or federal or federally-assisted contract for public buildings and public works or for goods or services that is let by a grantee shall contain an article prohibiting discriminatory employment practices by contractors, subcontractor, and suppliers of goods or services based on race, color, religion, national origin, ancestry, age or sex. The non-discrimination article shall include a provision requiring contractors and suppliers of goods or services to give written notice of their commitments under this section to any labor union, association or organization with which they have a collective bargaining or other agreement. Such notice shall also be given to the Commission and to SOMBA.

(3) Grantees shall adopt for use in all contracts for construction projects with a dollar value in excess of ten thousand dollars ($10,000) an adapted version of the Commonwealth of Massachusetts Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program (Supplemental Program) (301 CMR 50.17 Appendix 2 of these regulations). Such contract may include minority workforce percentages greater than those required for the geographical locations of the construction project as set forth in the Supplemental Program.

00850-12
(4) Grantees shall take affirmative steps to increase participation of minority business enterprise (MBEs) in any construction grant.

(5) Prior to the publication of the availability of contracts for construction work to be performed under any construction grant with a total dollar value in excess of ten thousand dollars ($10,000), the grantee shall notify SOMBA of its intent to solicit bids and shall make available to SOMBA, upon request, copies of the proposal to bid, specifications and plans, and bid invitations.

(6) At the discretion of the Commission there may be established for the life of any construction contract a body to be known as the Liaison Committee, which may be the Executive Office Liaison Committee as established by 301 CMR 50.09 (3) of these regulations. A representative of the grantee shall be a member of the Liaison Committee. The contractor or his agent shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

(7) Before making the final allocation of funds to any grantee, the Secretary shall review any contracts for construction work to be performed under the grantee, to ascertain the grantee's compliance with the provisions of these regulations.
MINIMUM PERCENTAGES TO BE APPLIED TO STATE AND STATE-ASSISTED CONTRACTS WITHIN THE COMMONWEALTH OF MASSACHUSETTS

The following percentages shall apply

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td><strong>Boston:</strong></td>
<td></td>
</tr>
<tr>
<td>Impact Area (Jamaica Plain (part), Mattapan, South Cove, Chinatown, Bay Village, Roxbury, Dorchester, South End.)</td>
<td>30%</td>
</tr>
<tr>
<td>Others</td>
<td>10%</td>
</tr>
<tr>
<td>Cambridge:</td>
<td>12%</td>
</tr>
<tr>
<td>New Bedford:</td>
<td>18%</td>
</tr>
<tr>
<td>Springfield:</td>
<td>10%</td>
</tr>
<tr>
<td>All other cities and towns</td>
<td>10%</td>
</tr>
</tbody>
</table>
Be it ordered that Chapter 24 of the Zoning Ordinance of the City of Quincy as amended, be further amended in Art. VIII, by adding a new section 87: Blasting.

Section 87

1. Pre-blast Survey

   a. For all permits issued for blasting (rock excavation) in the City of Quincy, a pre-blast survey must be made by the contractor or by an approved firm in this kind of work and satisfactory to the contractor's insurance company.

   b. The pre-blast survey will include a survey of the interior and exterior of existing buildings and stone walls adjacent to the project as specified herein, before any excavation or blasting is done. Written approval must be secured from the Fire Chief, City Engineer and Building Inspector serving as the Committee on Blasting.

   c. The survey shall record all visible structural defects such as cracks, settlement and lines out of plumb.

   d. The survey data shall be recorded in a permanent manner in approved hardbound notebooks. The survey data shall include polaroid photographs showing the building constructions surveyed referenced to the notebook pages. Also a tape recording of all data pertinent to the survey shall be made. The scope and format of the record survey data shall be satisfactory to the Committee on Blasting. Before commencing any blasting or ledge excavation, copies of the survey must be on file at the offices of the Quincy City Engineer, and Quincy City Clerk, City Hall, Quincy, MA.

   e. The adjacent area requiring the pre-blasting survey is specified as all buildings and stone walls within a radius of three hundred fifty feet (350) from said blast.

   f. Provided, however, that no pre-blasting survey shall be required if blasting is within the following limits: The total charge weight per blast does not exceed five (5) pounds and the maximum weight per delay does not exceed two pounds per delay.

YEAS Cahill, Cheney, Chretien, DeCristofaro, McGrath, Nulley, Phelan, Sheehan, Tolland

NAYS Cahill, Cheney, Chretien, DeCristofaro, McGrath, Nulley, Phelan, Sheehan, Tolland

00850-15
g. If blasting is designed to excavate more than a ten (10) cubic yard area, the contractor must post a bond with the City of Quincy. The amount of said bond shall be determined by the Committee on Blasting. The Committee on Blasting will not release the bond until it is convinced that all judgments and claims have been reasonably dealt with by the contractor.

h. All blasting is to be supervised on site by an authorized member of the Fire Department, assigned by the Chief, and the cost of said supervision shall be the sole responsibility of the contractor.

i. Any person who shall violate any of the provisions of this ordinance, as determined by the Committee on Blasting, or who fails to comply therewith, shall severally, for each and every violation and noncompliance respectively, be liable to a penalty of two hundred dollars ($200.00) for each offense.

PASSED TO BE ORDAINED OCTOBER 16, 1980

ATTEST

CLERK OF COUNCIL

APPROVED

OCT 23, 1980

MAYOR

YEAS Cahill, Cheney, Chreien, DeCristofaro, McGrath, Nutley, Phelan, Sheers, Toland

NAYS Cahill, Cheney, Chreien, DeCristofaro, McGrath, Nutley, Phelan, Sheers, Toland
Equitable adjustment in contract price for differing subsurface or latent physical conditions

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions; and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.
<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>01010</td>
<td>Summary of Work</td>
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<tr>
<td>01024</td>
<td>Measurement and Payment</td>
</tr>
<tr>
<td>01040</td>
<td>Project Coordination</td>
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<tr>
<td>01050</td>
<td>Field Engineering</td>
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<tr>
<td>01110</td>
<td>Environmental Protection Procedures</td>
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<td>01200</td>
<td>Project Meetings</td>
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<td>01300</td>
<td>Submittal Procedures</td>
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<tr>
<td>01311</td>
<td>Construction Progress Schedules</td>
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<tr>
<td>01370</td>
<td>Schedule of Values</td>
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<td>01400</td>
<td>Quality Assurance</td>
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<td>01500</td>
<td>Temporary Facilities and Controls</td>
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<td>01700</td>
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<tr>
<td>01710</td>
<td>Cleaning Up</td>
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<tr>
<td>01740</td>
<td>Warranties and Bonds</td>
</tr>
</tbody>
</table>
SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 LOCATION OF WORK

A. The work of this Contract is located in the City of Quincy, at the Mount Wollaston Cemetery at 20 Sea Street.

1.3 SCOPE OF WORK

A. Furnish all labor, materials, plant, services, equipment, devices, and appurtenances required for the completion of the project.

B. The Work includes, but is not necessarily limited to, the following major items:

1. Mobilization and demobilization.

2. Field trailer setup and maintenance.

3. Field engineering for establishing line and grade, and developing as-built drawings.

4. Installing 70 linear feet of erosion control barriers.

5. General site preparation and demolition, including excavation and disposal of 249 cubic yards of asphalt roadway and 70 cubic yards of existing concrete sidewalks,

6. Demolition of existing water spigots.

7. Removing and replacing 1 catch basin.

8. Roadway regrading and repaving along Greenleaf Street, at the intersections with Balsam, Sycamore and Linden Avenues, including 100 ton of new asphalt.
9. Installation of 2 water service manholes and 2 water service meters.

10. Installing 50 linear feet of 2-inch-diameter High Pressure Polyethylene, Class 200 Pipe for the seasonal distribution system.

11. Installing 5,328 linear feet of 1\(\frac{1}{2}\)-inch-diameter High Pressure Polyethylene, Class 200 Pipe for the seasonal distribution system.

12. Installing 9,328 linear feet of 1-inch-diameter High Pressure Polyethylene, Class 200 Pipe for the seasonal distribution system.

13. Installing an irrigation system at the 1.8-acre Veterans Cemetery Area.

14. Installing 74 new water fountains, including granite posts and spigots.

15. Providing the City of Quincy with materials for 10 extra fountains, including granite posts and other fountain materials.

16. Placing 182 ton of asphalt patching at the surface of waterline trenches.

17. Topsoiling and seeding of disturbed areas.

18. Miscellaneous lump sum items.

C. The work shall also conform to such additional Drawings and addenda to these Specifications and Drawings as may be published or exhibited prior to the opening of bid proposals and to such drawings in explanation of details, or as may be furnished by the Engineer from time to time during the construction.

D. Work and materials which are necessary in the construction but which are not specifically referred to in the Specification, or shown on the Drawings, but implied by the Contract shall be furnished by the Contractor at his own cost and expense and shall be such as will correspond with the general character of the work as may be determined by the Engineer, whose decisions as to the necessity for and character of such work and materials shall be final and conclusive. It is the intent of these Specifications to produce a complete, operational and finished project whether shown in every detail or not.

1.4 WORK BY OTHERS

A. The following work will be performed by others concurrently with the Work of this Contract.

Mt. Wollaston Cemetery Improvements
Quincy, MA
2016-086

SUMMARY OF WORK

01010 - 2
1. Installation of two 6-inch-diameter water taps by the City of Quincy DPW at the water service meter locations.

B. Refer to Article 7 of the General Conditions for additional requirements.

1.5 CONTRACTOR'S USE OF PREMISES:

A. Contractor shall limit the use of the premises for the performance of the Work and storage of materials and equipment to allow for the Owner's use in operating and maintaining the pumping stations.

B. Contractor shall coordinate with Owner, access for normal maintenance requirements.

C. Contractor shall assume full responsibility for security of all his and his subcontractors materials and equipment stored on the site.

D. If directed by the Owner, Contractor shall move stored items which interfere with operations of Owner.

E. Obtain and pay for use of additional storage or work areas if needed to perform the Work.

1.6 UNDERGROUND UTILITIES

A. The underground utilities indicated on the drawings have been located primarily from information furnished by others and are considered approximate both as to size and location. There are additional utilities to be encountered that are not shown on the drawings, and it shall be the Contractor's responsibility to locate all existing utilities and to protect same from damage or harm. All utilities interfered with or damaged shall be properly restored, at the expense of the Contractor, to the satisfaction of its Owner.
B. The following is a partial list of Owners of Utilities:

<table>
<thead>
<tr>
<th>Quincy Park &amp; Forestry Department</th>
<th>Quincy Public Works Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paul Franz, Director</td>
<td>Daniel Raymondi, Commissioner</td>
</tr>
<tr>
<td>One Merrymount Parkway</td>
<td>55 Sea Street</td>
</tr>
<tr>
<td>Quincy, MA 02169</td>
<td>Quincy, MA 02169</td>
</tr>
<tr>
<td>Phone: (617) 376-1253</td>
<td>Phone: (617) 376-1959</td>
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<table>
<thead>
<tr>
<th>Mass. Water Resources Authority</th>
<th>Quincy Water, Sewer and Drain Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permitting Department, Field Operations</td>
<td>Paul Della Barba, Ops Manager</td>
</tr>
<tr>
<td>980 Harrison Avenue</td>
<td>55 Sea Street</td>
</tr>
<tr>
<td>Boston, Ma 02119</td>
<td>Quincy MA 02169</td>
</tr>
<tr>
<td>Phone: (617) 305-5956</td>
<td>Phone: (617) 376-1406</td>
</tr>
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</table>

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<thead>
<tr>
<th>DIG SAFE</th>
<th>National Grid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone: (888) 344-7233</td>
<td>Phone: (800) 233-5325</td>
</tr>
</tbody>
</table>

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01010
PART 1 - GENERAL

1.1 SUMMARY

A. The following subsections describe the measurement of and payment for the work to be done under the items listed in the BID.

1. Estimates of lump sum items shall be based on a schedule of values dividing each such item into its appropriate component parts together with a quantity and a unit price for each part so that the sum of the products of prices and quantities will equal the Contract price for the item. This schedule shall be submitted by the Contractor for and must have the approval of the Engineer before the first estimate becomes due. Submit the schedule of values in accordance with Articles 2.05 and 2.07 of the General Conditions.

B. Each unit or lump-sum price stated in the BID shall constitute full compensation as herein specified for each item of work completed in accordance with the drawings and specifications, including cleaning up.

C. The prices for those items which involve excavation shall include compensation for disposal of surplus excavated material, handling water, and installation of all necessary sheeting and bracing.

D. In all items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price therefor shall be in addition to the cost of excavating earth, and no deduction will be made in the amount for earth excavation.

E. If changes are made in the design based on the drawings and specifications as issued, and should such changes increase or decrease the quantity of work to be done, an adjustment will be made therefor as stipulated in the General Conditions.

1.2 LIMITS OF NORMAL EXCAVATION

A. In determining the quantities of excavation to which unit prices shall apply, the limits of normal width and depth of excavation shall be as described below, unless other limits are indicated on the Drawings or specified.
B. For pipes and conduits in trench, the normal width of the trench shall be as shown on the drawing details.

C. For concrete placed directly against undisturbed earth, the normal width and depth of the excavation for such concrete shall be measured to the neat lines of the concrete as indicated on the Drawings or as ordered.

D. For other structures, except manholes as noted below, the normal width shall be measured between vertical planes 1 ft. outside the neat lines of the several parts of the structure, except that the width at any elevation shall be measured as not less than the width at a lower elevation. The normal depth shall be measured to the underside of that part of the structure for which the excavation is made.

E. No additional width or depth of trenches excavated in earth or rock shall be allowed at standard circular manholes.

F. Wherever bell holes are required for jointing pipe, they shall be provided without additional compensation over and above that resulting from measurements as above described.

1.3 ITEM DESCRIPTIONS

A. Item 1: Mobilization and Demobilization:

1. For the lump sum bid price for this Item, the Contractor shall mobilize and demobilize to and from the site all labor, materials, and equipment to complete all work associated with this contract. Demobilization from the site includes, but is not limited to: removal of all equipment and final cleanup to the satisfaction of the City of Quincy.

2. Payment for the mobilization and demobilization shall be by lump sum. Fifty percent of the lump sum price shall be paid to the Contractor upon completing mobilization activities, and the remaining fifty percent shall be paid upon demobilization from the site.

B. Item 2: Field Trailer Set-up and Maintenance:

1. For the lump sum bid price for this Item, the Contractor shall supply and maintain a field trailer for use as an Engineer's field office for the entire duration of the project.

2. Payment for the field office trailer shall be by lump sum, and shall include all set-up and maintenance costs, mobilization and demobilization, as per the Specifications. Fifty percent of the lump sum price shall be paid to the Contractor upon delivery of the trailer to the site, and the remaining fifty percent shall be paid upon removal of the trailer from the project site.
C.  Item 3: Field Engineering:

1.  Under the lump sum bid price for this Item, the Contractor shall provide survey services necessary to perform site layout, construction line and grade, an as-built, and submission of all specified drawings and AutoCADD drawing files.

2.  Payment for this lump sum Item shall be made based on the percentage of work completed, as determined by the Engineer.

D.  Item 4: Erosion Control Barriers:

1.  Under the unit bid price for this Item, the Contractor shall install 70 linear feet of 9-inch straw wattles where shown and detailed on the project drawings.

2.  Payment for this unit price Item shall be made based on the actual linear feet of this item installed, as determined by the Engineer.

E.  Item 5: Site Preparation and General Demolition:

1.  Under the lump sum price for this Item, the Contractor shall provide all labor, materials and equipment to complete work shown on the drawings, including:
   a.  Cutting and excavation of asphalt over an estimated 11,855 square feet of roadway demolition, 5,331 square feet of roadway regrading area along Greenleaf Street (at Balsam, Sycamore and Linden Avenues), and 9,719 square feet for pipe trenching.
   b.  Excavation of 3,755 square feet of concrete sidewalk along Greenleaf Street.
   c.  Disposal of 249 cubic yards of asphalt and 70 cubic yards of concrete.
   d.  Conducting all work to abandon the existing water lines in-place.

2.  Payment for this lump sum Item shall be made on the percentage of work completed, as determined by the Engineer in the field.

F.  Item 6: Existing Water Fountain Demolition:

1.  Under the lump sum bid price for this Item, the Contractor shall demolish and remove the remaining existing water fountains (spigots) where shown on Sheet D-1. Work will include the removal and stockpiling on site of existing brick and granite paver splash pads.

2.  Payment for this unit price item shall be made based on the percentage of work completed, as determined by the Engineer.
G. Item 7: Catch Basin (Remove and Replace):

1. Under the lump sum price for this Item, the Contractor shall demolish and remove 1 catch basin and install a new catch basin as detailed on the drawings. Work will include the reconnection of all drainage piping with HDPE pipe to match existing diameters.

2. Payment for this lump sum Item shall be made based on the percentage of work complete, as determined by the Engineer.

H. Item 8: Greenleaf Street (Balsam, Sycamore and Linden Avenue) Roadway Regrading:

1. Under the lump sum price for this Item, the Contractor shall provide all materials, labor and equipment to regrade the three Greenleaf Street intersection areas at Balsam, Sycamore and Linden Avenues. Work will include all earthwork to relocate existing materials for subgrade preparation; providing borrow and dense graded materials; compaction and all soils testing.

2. Payment for this lump sum Item shall be made based on the percentage of work complete, as determined by the Engineer.

I. Item 9: Greenleaf Street (Balsam, Sycamore and Linden Avenue) Roadway Paving:

1. Under the unit price for this Item, the Contractor shall provide all materials, labor and equipment to place 100 ton of asphalt at the three intersection areas as shown on the drawings.

2. Payment for this unit price Item shall be made based on the actual amount of asphalt placed, as determined by the Engineer.

J. Item 10: Water Service Taps (BY OTHERS):

1. Under the unit price for this Item, the Quincy Department of Public Works shall provide all materials, labor and equipment to perform two water service taps as shown on the drawings. Work shall include all disinfection and testing.

2. Payment for this unit price Item shall be made based on the number of taps completed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.
K. **Item 11: Water Meter Manholes:**

1. Under the unit price for this Item, the Contractor shall provide all materials, labor and equipment to install two water meter manholes as shown on the drawings.

2. Payment for this unit price Item shall be made based on the number of manholes installed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

L. **Item 12: Water Meters:**

1. Under the unit price for this Item, the Contractor shall provide all materials, labor and equipment to install two water meters as shown on the drawings.

2. Payment for this unit price Item shall be made based on the number of water meters installed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

M. **Item 13: 2-inch High Pressure Polyethylene, Class 200 Pipe:**

1. Under the unit price for this Item, the Contractor shall provide all materials, labor and equipment to install 50 linear feet of 2-inch High Pressure Polyethylene, Class 200 Pipe as shown on the drawings. Work shall include all disinfection and testing.

2. Payment for this unit price Item shall be made based on the actual linear feet of pipe installed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

N. **Item 14: 1 1/2-inch High Pressure Polyethylene, Class 200 Pipe:**

1. Under the unit price for this Item, the Contractor shall provide all materials, labor and equipment to install 5,328 linear feet of 1 1/2-inch High Pressure Polyethylene, Class 200 Pipe as shown on the drawings. Work shall include all disinfection and testing.

2. Payment for this unit price Item shall be made based on the actual linear feet of pipe installed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

O. **Item 15: 1-inch High Pressure Polyethylene, Class 200 Pipe:**

1. Under the unit price for this Item, the Contractor shall provide all materials, labor and equipment to install 9,328 linear feet of 1-inch
High Pressure Polyethylene, Class 200 Pipe as shown on the drawings. Work shall include all disinfection and testing.

2. Payment for this unit price Item shall be made based on the actual linear feet of pipe installed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

P. Item 16: Veteran’s Area Irrigation System:

1. Under the designated lump sum price of $25,000 for this Item, the Contractor shall provide all materials, labor and equipment to install a Veteran’s Area Irrigation System where shown on the drawings. Work shall include all disinfection and testing.

2. Payment for this lump sum Item shall be made based on the estimated percentage of work completed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

Q. Item 17: Granite Post and Water Fountain Installations:

1. Under the unit price for this Item, the Contractor shall provide all materials, labor and equipment to install 74 new granite post and water fountains as shown on the drawings. Work shall include concrete and earthwork, all disinfection and testing.

2. Payment for this unit price Item shall be made based on the actual number of water fountains installed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

R. Item 18: Extra Granite Post and Water Fountain Material Kits:

1. Under the unit price for this Item, the Contractor shall provide 10 extra sets of the granite posts and water fountain faucet materials. The cost shall be for materials alone and for the delivery of the materials to 20 Sea Street, Quincy.

2. Payment for this unit price Item shall be made based on the actual number of water sets delivered to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

S. Item 19: For the Water Fountain Splash Pads:

1. Under the unit price for this Item, the Contractor shall provide all materials, labor and equipment to install 74 water fountain splash pads as shown on the drawings. Work shall include all earthwork, masonry work and materials testing.
2. Payment for this unit price Item shall be made based on the actual number of splash pads installed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

T. Item 20: Asphalt Trench Patching:

1. Under the unit price for this Item, the Contractor shall provide all materials, labor and equipment to install 182 ton of asphalt patching for trenches as shown on the drawings.

2. Payment for this unit price Item shall be made based on the actual amount of asphalt installed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

U. Item 21: Topsoiling and Seeding of Disturbed Areas:

1. Under the lump sum price for this Item, the Contractor shall provide all materials, labor and equipment to complete topsoiling (6-inch minimum depth) and seeding of disturbed areas, over the former sidewalk area, and in roadway shoulders.

2. Payment for this unit price Item shall be made based on the percentage of work completed to the satisfaction of the Quincy Department of Public Works, as determined by the Engineer.

V. Item 22: Remaining Lump Sum Items:

1. Under the lump sum price for this Item, the Contractor shall provide all materials, labor and equipment to complete all remaining items as required by the contract specifications and drawings, which is not included in Bid Items 1 through 23. This shall include, but is not limited to, the following:

   a. Coordination of on-going cemetery operations with the City.

   b. Attending the pre-construction conference and all required job progress and community meetings, and coordination of all construction activities with the appropriate local authorities and utilities.

   c. Submission of all schedules, lists, laboratory test results, materials and sources, survey documentation, environmental monitoring documentation, and shop drawings, as required, in a timely manner to the Engineer for review and approval.
d. Providing a site-specific Health and Safety Plan for the Contractor's employees, in accordance with the minimum standards set forth in OSHA 29 CFR 1910.120. The Plan and Statement of Certification will be submitted to the Engineer for their records prior to construction.

e. Implementation of the Health and Safety Plan and environmental monitoring of the site to provide for on-site health and safety, and to protect potential site abutters, to the satisfaction of the Owner.

f. Protection of existing structures and utilities during construction.

g. Additional erosion control measures to prevent exposed fill, excavated material, or other materials from washing away or otherwise eroding from slopes.

h. Traffic management and control, including all necessary police details.

i. Providing all required quantities and warranties.

j. Overhead and Profit.

2. Payment for this lump sum item shall be made based on the percentage of work completed, as determined by the Engineer.

1.4 MISCELLANEOUS EARTH EXCAVATION

A. Should modifications in the structures or pipelines be ordered, and should such modifications increase or decrease the quantity of earth excavation and backfill above normal grade from that indicated on the drawings or specified, adjustment shall be made therefor under the appropriate subdivision of this item. No adjustment will be made for backfill materials excavated from the site.

B. The quantity of earth excavation and backfill above normal grade to be considered under this item shall be the additional quantity done or that quantity omitted in accordance with the requirements of the Engineer. The limits of measurement shall be as defined above.

C. The quantities to be considered under this item shall be cumulative, that is, an increase on any part of the work shall offset a decrease on any other part of the work and the final adjustment shall be based on the net increase or decrease.
D. If an additional quantity of earth excavation and backfill above normal grade is ordered or permitted by the Engineer, the Contractor shall be paid therefor at the unit price for this item.

E. The unit price for this item shall constitute full compensation for excavation and backfill and all work incidental thereto including drainage.

F. If the quantity of excavation and backfill done by the Contractor is less than that indicated on the drawings or specified, the Owner shall receive credit for such decrease at the unit price for this item whether done by hand or by machine.

G. If, in the opinion of the Engineer, the material below normal grade of any excavation is unsuitable for foundation, it shall be removed to such limits as the Engineer may direct, which work shall be done under the appropriate subdivision of this adjustment class; whether done by hand or by machine, the quantity of excavation below normal grade to be paid for under this item shall be equal to the number of cubic yards of unsuitable material excavated, measured to the extent of the work done as ordered by the Engineer.

H. The unit price for this item shall constitute full compensation for excavation below normal grade and disposal of unsuitable material.

1.5 ROCK EXCAVATION AND DISPOSAL

A. Where rock is encountered, it shall be uncovered but not excavated until measurements have been made by the Engineer, unless in the opinion of the Engineer, satisfactory measurements can be made in some other manner.

B. The quantity of rock to be paid for under this item shall be the number of cubic yards of rock, measured in place before excavation, within the limits of normal excavation as defined above, unless rock excavation beyond such limits has been authorized in writing by the Engineer, in which case measurement shall be made to the authorized limits.

C. Excavated rock which has not been disposed of will not be included for payment.

D. The bidder shall include in his bid for items involving excavation, the cost of doing the entire excavation as earth, the price for this item being intended to cover the difference between the cost of rock excavation and the cost of earth excavation. The price for this item will be paid in addition to any payment made for earth excavation.
E. The unit price shall constitute full compensation for rock excavation and disposal, for all necessary backfilling, and for furnishing all additional material needed for backfilling.

F. If material suitable for backfilling is not available in sufficient quantity from other excavations, the Contractor shall, at his own expense, furnish suitable material from outside sources.

1.6 EXTRA WORK

A. Extra work, if any, shall be performed in accordance with the General Conditions and Supplementary Conditions.

END OF SECTION 01024
SECTION 01040

PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:

1. Coordination.

2. Administrative and supervisory personnel.


4. Cleaning and protection.

B. Progress meetings and preconstruction conferences are included in Section 01200 - Project Meetings”.

C. Requirements for the Contractor’s Construction Schedule are included in Section 01300 - SUBMITTAL PROCEDURES.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Inspect the conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner, and at no additional cost to the Owner.

B. Manufacturer's Written Instructions: Comply with manufacturer's written installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than
requirements contained in the Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items, and at no additional cost to the Owner.

D. Provide attachment and connection devices and methods for securing work. Secure work true to line and level. Allow for expansion and utility movement.

E. Recheck measurements and dimensions before starting installation or erection.

F. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material to prevent deterioration.

G. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

3.2 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Install protective covering to ensure protection from damage or deterioration.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period.

C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Air contamination or pollution.
5. Water or ice.
7. Chemicals.
8. Heavy traffic.
10. Unprotected storage.
11. Improper shipping or handling.
12. Theft.
13. Vandalism.

END OF SECTION 01040
SECTION 01050
FIELD ENGINEERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Examination of site and conditions of construction.
2. Establishment of lines, grades, and easements.
3. Connections to existing facilities.
4. Restoration and protection of public and private property.

B. Related section includes the following:

1. Section 02525 - Paving, Sidewalks and Curbing

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:

1. As-Built Drawings: The Contractor shall be responsible for maintaining two sets of redline "as-built locations and dimensions of work". The As-Built Drawings shall be submitted to the Owner at substantial completion of the project.

2. The Contractor shall submit copies of field records and record drawings each month with project invoices. Field data shall be updated each month as applicable.

3. A post construction “As-Built” survey of the new work shall be provided by the Contractor for the Owner’s records and use

A. The Contractor shall submit the record drawing as specified
above, and as an AutoCAD drawing file, meeting the City of Quincy’s AutoCAD specifications at a scale of 1” = 40’.

1.4 PROJECT/SITE CONDITIONS:

A. Environmental Requirements:

1. Unfavorable Construction Conditions:

a. During unfavorable weather, wet ground, or other unsuitable construction conditions, confine operations to work which will not be affected adversely by such conditions.

b. No portion of Work shall be constructed under conditions which adversely affect quality or efficiency thereof, unless special means or precautions are taken to perform Work in manner acceptable to the Engineer.

B. Field Measurements:

1. Lines and Grades:

a. All Work shall be done to lines, grades, and elevations indicated on drawings or specified herein.

b. Basic vertical control points have been established or designated by the Engineer. Contractor shall be responsible for maintaining or subsequently replacing these controls to the satisfaction of the Engineer if these controls are disturbed. The Contractor shall be responsible for verifying all vertical control information that is used.

   (1) Points shall be used as datum for work.
   (2) Contractor shall be responsible for transferring all lines and grades from basic survey control points.

c. Contractor to perform all additional survey, layout, and measurement work.

   (1) Surveyor shall be a registered land surveyor in the location of the project.

d. Keep the Engineer informed, in writing, two weeks in advance, of times and places at which work is to be performed, so that horizontal and vertical control points may be established and any checking deemed necessary by the Engineer may be performed.
e. Remove and reconstruct Work which is improperly located as determined by the Engineer and at no additional cost to the Owner.

2. Easements and Rights-of-Way:
   a. Easements and rights-of-way for utilities, if required, will be provided by the Owner.
   b. Confine construction operations within limits indicated on drawings and/or within limits of easements or public ways.
   c. Place construction tools, equipment, excavated materials, and pipeline materials and supplies, so as to cause least possible damage to property and interference with traffic.

PART 2 - PRODUCTS

2.1 MATERIALS
   A. Use new materials in restoration of existing facilities except where soil materials and plants may be reused, as appropriate.

PART 3 - EXECUTION

3.1 EXAMINATION
   A. Examination of Site and Verification of Conditions:
      1. Before starting operations, examine site to become acquainted with conditions to be encountered.
      2. Verify exact locations of sewers, water mains, gas mains, above or below ground electrical wires, other utilities, conduits and structures which may interfere with work.
      3. Perform all test pit excavations as needed prior to any pipe laying operations. Contractor shall perform test pit excavations in locations where he feels information is required to perform the work.

3.2 APPLICATION
   A. Connections to Existing Facilities:
1. Make connections to existing facilities as indicated on drawings or as specified.

2. Obtain permission from specific utility owners in writing prior to undertaking connections.
   a. Protect facilities against deleterious substances and damage.

3. Plan in advance all connections to existing facilities which are in service.
   a. All equipment, materials, and labor shall be on hand at time of undertaking connections to existing facilities in service.
   b. Work shall proceed continuously if necessary to complete connections within the time designated by the Engineer.
   c. Existing water distribution systems to be connected to, shall not be taken out of service during periods of high demand; coordinate any disruptions to service with the Owner.

4. Operation of valves or other appurtenances on existing utilities, when required, shall be performed by respective utility personnel.
   a. Owner’s water distribution system valves shall be operated by Owner’s Distribution Section personnel only.
      
      (1) A tight shutdown of existing Owner’s or Community valves is not guaranteed; Contractor shall control leakage past valves to satisfaction of the Owner and Engineer and at no additional cost to the Owner.
   b. Community water distribution system valves shall be operated by the community’s water department personnel only. The Contractor shall give the local water department three working (3) days advance notice prior to performing any work requiring the operation of local water distribution system valves.

B. Restoration and Protection of Public and Private Property:

1. Protect, shore, brace, support, and maintain all underground pipes, conduits, drains, and other underground construction uncovered or otherwise affected by construction operations.

2. Restore all public and private property including pavement, surfacing, curbs, walks, utility poles, guy wires, fences, and other surface structures
affected by construction operations, together with all sod and landscaping to their original condition or better, whether within or outside easements.

3.4 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 01050
SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SCOPE OF WORK:

A. The work covered by this section consists of furnishing all labor materials and equipment and performing all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environmental for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water, and land, and involves management of noise and solid waste, as well as other pollutants.

C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching, or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area. Requirements for erosion and sedimentation controls are specified in Section 02020.

D. These Specifications are intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.
E. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the City of Quincy Forestry and Parks Department.

F. Schedule and conduct all work in a manner that will minimize the level of noise escaping the site, especially at night and on weekends.

1.3 APPLICABLE REGULATIONS:

A. Comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement.

1.4 NOTIFICATIONS:

A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectional acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or local requirements. The Contractor shall, after receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.5 IMPLEMENTATION:

A. Prior to commencement of the work, meet with the Engineer to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when approved by the Engineer, and incorporate permanent control features into the project at the earliest practicable time.

PART 2 - PRODUCTS (NOT USED)
PART 3 - EXECUTION

3.1 EROSION CONTROL:

A. Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures such as siltation basins, hay check dams, mulching, jute netting, and other equivalent techniques shall be used as appropriate. Offsite surface water shall be diverted around the site to a downstream channel ahead of siltation barriers. Flow of surface water into excavated areas shall be prevented. Ditches around construction area shall also be used to carry away water resulting from dewatering of excavated areas. At the completion of the work, ditches shall be backfilled and the ground surface restored to original condition.

3.2 PROTECTION OF CEMETERY RESOURCES:

A. Care shall be taken to prevent or reduce to a minimum any damage to any cemetery resources from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials. Water that has been used for washing or processing, or that contains oils or sediments, shall not be directly returned to the interment areas. Such water will be diverted through a settling basin or filter before being directed into a ground area approved by the City Forestry and Parks Department.

B. The Contractor shall not discharge water from dewatering operations directly into any interment areas. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.

C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action drawing or plan approved by the City of Quincy Park and Forestry Department.

D. Water being flushed from structures or pipelines after disinfection, with a Cl2 residue of 2 mg/l or greater, shall be treated with a dechlorination solution, in a method approved by the Engineer, prior to discharge.

3.3 PROTECTION OF OTHER LAND RESOURCES:

A. Land resources within the project boundaries and outside the limits of permanent work shall be restored to a condition, after completion of construction, that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.
B. Outside of areas requiring earthwork for the construction of the new facilities, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.

C. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly before beginning operations near them.

D. Any trees or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition. The Engineer will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of.

All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-in. in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.

Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed and replaced.

E. The locations of the Contractor's storage, and other construction building, required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be cleared as shown on the Drawings and shall require written approval of the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for approval of the Engineer.

F. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling, and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be
prepared and seeded as described in Section 01568, or as approved by the Engineer.

G. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.4 PROTECTION OF AIR QUALITY:

A. Burning. The use of burning at the project site for the disposal of refuse and debris will not be permitted.

B. Dust Control. The Contractor will be required to maintain all excavations, embankments, stockpiles, access roads, plant sites, waste areas, borrow areas, and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded, and which would cause a hazard or nuisance to others.

C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of chlorides may be permitted with approval from the Engineer.

D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor must have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer.

3.5 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION:

A. During the life of this Contract, maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

3.6 NOISE CONTROL:

A. The Contractor shall make every effort to minimize noises caused by his operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with State and Federal (OSHA) regulations.
SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 PRE-BID CONFERENCE

A. Prior to the opening of the bids, a site conference shall be held with prospective bidders. All Contractors are urged to attend. Approximately two (2) weeks before the bid opening, all Contractors who have requested bid documents shall be furnished with the date, time and place of the meeting.

1.3 PRE-AWARD MEETING

A. Prior to award of contract, a pre-award meeting shall be scheduled with the prospective General Contractor who has been deemed the lowest responsive, qualified bidder. The time and place shall be arranged by the Engineer.

1.4 PRECONSTRUCTION CONFERENCE

A. A preconstruction conference will be held between the Contractor, the Engineer, the Owner, and applicable agency representatives to review the Contractor's proposed methods of complying with the requirements of the Contract Documents.

B. Contractor will be notified of the time, date and place where the preconstruction conference will be held.

1.5 PROGRESS MEETINGS WITH ENGINEER

A. In addition to other regular project meetings for other purposes (as indicated elsewhere in the Contract Documents), hold general progress meetings bi-weekly with times coordinated with preparation of payment requests. Meeting dates shall be established by the Engineer. Require every entity then involved in the planning, coordination or performance of work to be properly represented at each meeting. Include (when applicable) consultants, separate contractors (if any), principal subcontractors, suppliers/ manufacturers/fabricators, governing authorities, insurers, special supervisory personnel and others with an interest or expertise in the progress of the work.
Review each entity's present and future needs including interface requirements, time, sequence, deliveries, access, site utilization, temporary facilities and services, hours of work, hazards and risks, housekeeping, submittals, change orders, and documentation of information for payment requests. Discuss whether each element of current work is ahead of schedule. Determine how behind-time work will be expedited, and secure commitments from the entities involved in doing so. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within the Contract Time. Review everything of significance which could affect the progress of the work.

B. Within seven days after each progress meeting date, the Engineer will forward copies of the minutes-of-the-meeting, to the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01200
SECTION 01300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section specifies the general methods and requirements of submissions applicable to the following work-related submittals.

1. Shop Drawings.
2. Product Data.
3. Samples.
5. Operation and Maintenance Manuals
7. Construction or Submittal Schedules.
8. Or equal submittals.

B. Additional general submission requirements are contained in Paragraph 6.7 of the General Conditions.

C. Detailed submittal requirements will be specified in the technical specifications section.

1.3 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

A. Shop Drawings:

1. Shop drawings, as defined in the General Conditions, and as specified in individual work sections include, but are not necessarily limited to:
custom-prepared data such as fabrication and erection/installation (working) drawings of concrete reinforcement, structural details and piping layout, scheduled information, setting diagrams, actual shopwork manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications as applicable to the work.

2. All shop and working drawings shall be prepared on standard size, 24-in. by 36-in. sheets, except those which are made by changing existing standard shop or working drawings.

3. All shop drawings shall be submitted using a transmittal form approved by the Engineer. Submittal form shall include identification of transmittal number and specification section number.

4. All shop drawings submitted by subcontractors for review shall be sent directly to the Contractor for approval. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

5. The Contractor shall check all subcontractor's shop drawings regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof.

6. All details on shop drawings submitted for approval shall show clearly the relation of the various parts of the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted for approval.

7. If requested by the Engineer, submittals for equipment specified shall include a listing of all installations where identical or similar equipment has been installed and been in operation for a period of at least one year.

8. Submittals for equipment furnished shall include maintenance and lubrication schedules for each piece of equipment. Schedules shall be similar to the following sample schedules:
SAMPLE MAINTENANCE SCHEDULE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ACTION</th>
<th>FREQUENCY</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedimentation</td>
<td>Check removal of scum washdown; if required, remove any debris, etc.</td>
<td>Daily</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>Dewater, examine structure, scrape and paint all exposed walls of structure, metals, examine scraping shoes.</td>
<td>6 mos.</td>
<td>Scrape and clean Repair any damage to scraping shoes.</td>
</tr>
<tr>
<td>Sludge Collector Drive Unit</td>
<td>6 mos</td>
<td>Remove shear pin, clean off rust, grease and replace.</td>
<td>Check Servicability</td>
</tr>
</tbody>
</table>
B. Product Data:

1. Product data as specified in individual sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and printed installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances including certificates of compliance and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications and recommended spare-parts listing, and printed product warranties, as applicable to the Work.

C. Samples:

1. Samples specified in individual sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the Work.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor shall review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:

1. Field measurements

2. Field construction criteria

3. Catalog numbers and similar data

4. Conformance with the Specifications

B. Each shop drawing, sample, and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials,
dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." Shop drawings and product data sheets 11-in. X 17-in. and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Engineer a copy of each submittal transmittal form for shop drawings, product data and samples at the time of submittal of said drawings, product data and samples to the Engineer.

1. Submittals received “WITHOUT” Certification Statement shall not be reviewed.

C. If a shop drawing shows any deviation from the requirements of the Contract Documents, the Contractor shall make specific mention of the deviations in the Transmittal Form furnished by the Engineer and provide a description of the deviations in a letter attached to the submittal.

D. The review and approval of shop drawings, samples or product data by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will not have responsibility therefor.

E. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

F. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.

1. Manufacturer's printed installation instructions, a part of product data submitted to the Engineer will not be reviewed and are for informational purposes only.

1.5 “OR EQUAL”

A. Should the Contractor seek approval of a product other than the brand or brands named in these specifications, it shall furnish written evidence that such product conforms in all respects to the specified requirements, and that it has been used successfully elsewhere under similar conditions. Where the specified requirements involve conformance to recognized codes or standards
the Contractor shall furnish evidence of such conformance in the form of test or inspection reports, prepared by a recognized agency, and bearing an authorized signature.

B. Manufacturers' standard data and catalog cut sheets will not be considered sufficient in themselves, and the Engineer will not be responsible for seeking further data from the manufacturer, or for otherwise researching the product. Failure to provide complete data will be cause for rejection of the product.

C. The Contractor shall be responsible for all additional costs including license fees, foundation, piping and electrical work necessary to accommodate the proposed "or equal" equipment. Items which result in a cost reduction shall be presented and a change order reflecting 65% of the cost savings will be prepared and the contract price modified.

1.6 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other contractor.

B. All complete submittals shall be submitted sufficiently in advance of construction requirements to provide no less than fifteen (15) days, excluding Saturdays, Sundays and legal holidays for review from the time received at the Engineer's reviewing office. For submittals of major equipment, that require more than fifteen (15) days to review, due to its sheer complexity and amount of detail and also requiring review by more than one engineering discipline, a letter will be sent by the Project Manager or his/her designee to the Contractor informing him/her of the circumstances and the date it is expected the submittal will be returned to the Contractor.

C. Number of submittals required:

1. Shop Drawings: Unless otherwise stated in the respective Specifications Sections, submit six (6) copies.

2. Product Data: Unless otherwise stated in the respective Specifications submit six (6) copies.

3. Samples: Submit the number stated in the respective Specification Sections.

D. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.
2. The Project title and number.

3. Contractor identification.

4. The names of:
   a. Contractor
   b. Supplier
   c. Manufacturer

5. Identification of the product, with the specification section number, page and paragraph(s).

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the Work or materials.

8. Applicable standards, such as ASTM or Federal Specification numbers.


10. Identification of revisions on resubmittals.

11. An 8-in. X 3-in. blank space for Contractor and Engineer stamps.

E. Each shipment of drawings shall be accompanied by a transmittal form furnished by the Engineer giving a list of the drawing numbers and the names mentioned above.

1.7 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

A. The Engineer's review is for general conformance with the design concept and contract drawings. Markings or comments shall not be construed as relieving the Contractor from compliance with the contract plans and specifications or from departures therefrom. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.

B. The review of shop drawings, data, and samples will be general. They shall not be construed:

1. as permitting any departure from the Contract requirements;
2. as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;

3. as approving departures from details furnished by the Engineer, except as otherwise provided herein.

C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which the Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.

D. Two (maximum) copies of shop drawings or product data will be returned to the Contractor. Samples will not be returned.

E. Submittals will be returned to the Contractor under one of the action codes indicated and defined on the transmittal form furnished by the Engineer.

F. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing, on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the Engineer, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the Engineer.

G. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor, and will be considered "Rejected" until resubmitted. The Engineer may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

H. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least seven working days prior to release for manufacture.

I. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.
1.8 GENERAL PROCEDURES FOR SUBMITTALS

A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections, of the Specifications, so that the installation will not be delayed by processing times including disapproval resubmittal (if required), coordination with other submittals, inspection, testing (off-site and on-site), purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

1.9 CERTIFICATION FORMS

A. If specifically specified in other sections of these Specifications, the Contractor shall submit the applicable certification form for each item required, and in the form attached to this section, completely filled in and stamped.

1.10 CERTIFICATES OF COMPLIANCE

A. Certificates of Compliance specified in the specifications shall include and mean certificates, manufacturer’s certificates, certifications, certified copies, letters of certification and certificate of materials.

B. The Contractor shall be responsible for providing Certificates of Compliance requested and specified in the technical specifications. Certificates are required for demonstrating proof of compliance with specification requirements and shall be executed in 6 copies unless otherwise specified. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Supplier, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Supplier from furnishing satisfactory material, if after tests are performed on selected samples, the material is found not to meet the specific requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01300
CERTIFICATE OF DESIGN

The undersigned hereby certifies that he/she is a Professional Engineer registered in the state of ____________________ and that he/she has been employed by (Name of Contractor) ____________________ to design ____________________ in accordance with Specifications Section ______ for the (Name of Project) ____________________. The undersigned further certifies that he/she has performed similar designs previously and has performed the design of the ____________________; that said design is in conformance with all applicable local, state, and federal codes, rules, and regulations and professional practice standards; that his/her signature and Professional Engineer (P.E.) Stamp have been affixed to all calculations and drawings used in, and resulting from, the design; and that the use of that stamp signifies the responsibility of the undersigned for that design.

The undersigned hereby certifies that he/she has Professional Liability Insurance with limits of $1,000,000.00 and a Certificate of Insurance is attached.

The undersigned hereby agrees to make all original design drawings and calculations available to the Town/City of ____________________ or Owner’s representative with seven (7) days following written request therefore by the Owner.

________________________________________________________________________
P.E. Name

________________________________________________________________________
Contractor’s Name

________________________________________________________________________
Signature

________________________________________________________________________
Signature

________________________________________________________________________
Title

________________________________________________________________________
Title

________________________________________________________________________
Address

________________________________________________________________________
Address

Mt. Wollaston Cemetery Improvements
Quincy, MA
2016-086

SUBMITTAL PROCEDURES
01300 - 10
CERTIFICATE OF UNIT RESPONSIBILITY
For Specification Section ____

__________

(Section title)

In accordance with Section 01300, paragraph 1.9 of the contract documents, the undersigned manufacturer accepts unit responsibility for all components of equipment furnished under specification Section ____ and the requirements specified in Section 01900. We hereby certify that these components are compatible and comprise a functional unit suitable for the specified and indicated performance and design requirements.

__________________________
Notary Public

__________________________
Name of Corporation

__________________________
Commission Expiration Date

__________________________
Address

Seal: By: ____________________

Duly Authorized Official

__________________________
Legal Title of Official

__________________________
Date:

Mt. Wollaston Cemetery Improvements
Quincy, MA
2016-086

SUBMITTAL PROCEDURES
01300 - 11
SECTION 01310

CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. CONTRACTOR shall prepare and submit to ENGINEER for review within 30 days after Notice to Proceed, a construction progress schedule.

B. No work shall be done between 5:00 p.m. and 7:00 a.m. nor on Sundays or legal holidays without written permission of OWNER. However, emergency work may be done without prior permission.

C. Night work may be established by CONTRACTOR as regular procedure with written permission of OWNER. Such permission, however, may be revoked at any time by OWNER if CONTRACTOR fails to maintain adequate equipment and supervision for proper prosecution and control of work at night.

1.3 FORM OF SCHEDULES

A. Prepare schedules in form of a horizontal bar chart.

1. Provide separate horizontal bar for each trade or operation.

2. Horizontal time Scale: Identify first work date of each week.

3. Scale and spacing to allow space for notations and future revisions.

B. Format of Listings: Chronological order of start of each item of work.

C. Identification of Listings: By major specification section numbers.

1.4 CONTENT OF SCHEDULES

A. Construction Progress Schedule:
1. Show complete sequence of construction by activity.

2. Show dates for beginning and completion of each major element of construction and installation dates Water main installation (list streets, locations).
   
a. Demolition.
b. Miscellaneous concrete placement.
c. Connection to existing water mains.
d. Installation of new water mains and irrigation systems, including gates, valves, fountains and appurtenant work.
e. Placement of asphalt, sidewalks and curbing.
f. Subcontractor’s items of work.
g. Final cleanup.
h. Allowance for inclement weather.

3. Show projected percentage of completion for each item as of first day of each month.

1.5 SCHEDULE REVISIONS

A. Every 30 days CONTRACTOR shall revise construction schedule to reflect changes in progress of work.

B. Indicate progress of each activity at date of submittal.

C. Show changes occurring since previous submittal of schedule.

1. Major changes in scope.

2. Activities modified since previous submittal.

3. Revised projects of progress and completion.

4. Other identifiable changes.

D. Provide a narrative report as needed to define.

1. Problem areas, anticipated delays, and impact on schedule.

2. Corrective action recommended and its effect.

3. Effect of changes on schedules of other CONTRACTORS.
1.6 SUBMITTAL REQUIREMENTS

A. For initial submittal of construction schedule and subsequent revisions thereof, furnish six (6) copies of schedule to ENGINEER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01310
SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Provide schedule of values covering each lump sum bid item.

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:

1. Schedule of values.
   a. Revise and resubmit schedule until acceptable to the Engineer.

2. Itemize separate line item cost for work involving each lump sum item.
   a. Ensure that the sum of the items listed in the schedule of values for each lump sum item equals the price bid for the respective lump sum item.
   b. For "Mobilization and Demobilization", items such as Bond premium and temporary construction facilities may be listed separately in the schedule, provided amounts can be substantiated.

3. Breakdown installed costs into:
   a. Delivered cost of product.
   b. Total installed cost with overhead and profit.
      (1) Do not list overhead and profit as separate items.
   c. For water pipelines, include a breakdown for testing, chlorinating and putting into service.
4. An unbalanced schedule of values providing for overpayment on items of work performed first will not be accepted.

1.4 SEQUENCING AND SCHEDULING

A. Prepare schedule of values covering each lump sum item after review of tentative schedule at preconstruction conference, but before submission of first application for payment.

B. Before submitting any application for payment, obtain the Engineer's approval of the Schedule of Values.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01370
SECTION 01400
QUALITY ASSURANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section covers Quality Assurance and Control requirements for this contract.

B. The Contractor is responsible for controlling the quality of work, including work of its subcontractors, and suppliers and for assuring the quality specified in the Technical Specifications is achieved.

C. The work specified and provided in this specification section shall be Year 2000 Compliant in accordance with Article 6 of the General Conditions.

D. Refer to the Article 6 - Contractor's Responsibilities of the GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS.

1.3 TESTING LABORATORY SERVICES

A. All tests which require the services of a laboratory to determine compliance with the Contract Documents, shall be performed by an independent commercial testing laboratory acceptable to the Engineer. The laboratory shall be staffed with experienced technicians, properly equipped, and fully qualified to perform the tests in accordance with the specified standards.

B. Preliminary Testing Services: Unless otherwise specified, the Contractor shall be responsible for all testing laboratory services in connection with concrete materials and mix designs, the design of asphalt mixtures, gradation tests for structural and embankment fills, backfill materials, and all other tests and engineering data required for the Engineer's review of materials and equipment proposed to be used in the Work. The Contractor shall obtain the Engineer's acceptance of the testing laboratory before having services performed, and shall pay all costs for services.
C. Quality Control Testing Services: Perform all quality control tests in the field or in the laboratory on concrete, asphalt mixtures, moisture-density (Proctor) and gradation tests on structural and embankment fills, and backfill materials, in-place field density tests on structural and embankment fills, and other materials and equipment, during and after their incorporation in the Work. Field sampling and testing shall be performed in the general manner indicated in the specifications, with minimum interference with construction operations. The Engineer shall determine the exact time and location of field sampling and testing, and may require such additional sampling and testing as necessary to determine that materials and equipment conform with data previously furnished by Contractor and with the Contract Documents.

D. Arrangements for delivery of samples and test specimens to the testing laboratory will be made by the Contractor. The laboratory tests shall be performed within a reasonable time consistent with the specified standards. Furnish a written report of each test to the Engineer.

E. Contractor shall furnish all sample materials and cooperate in the sampling and field testing activities, interrupting the Work when necessary. When sampling or testing activities are performed in the field, the Contractor shall furnish personnel and facilities to assist in the activities.

F. The Contractor shall not retain any testing laboratory against which the Owner or the Engineer have reasonable objection, and if at any time during the construction process the services become unacceptable to the Owner, or the Engineer, either the Owner or the Engineer may direct in writing that such services be terminated. The request must be supported with evidence of improper testing or unreasonable delay. If the Engineer determines that sufficient cause exists, the Contractor shall terminate the services and engage a different testing laboratory.

G. Transmittal of Test Reports: Written reports of testing and engineering data furnished by the Contractor for the Engineer's review of materials and equipment proposed to be used in the Work shall be submitted as specified for Shop Drawings.

H. The testing laboratory shall furnish four copies of a written report of each test performed by laboratory personnel in the field or laboratory to the Contractor. Distribution shall be two copies of each test report to the Engineer's Representative, one copy to the Owner, and one copy for the Contractor within three days after each test is completed.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Refer to Article 3 - Contract Documents, Intent, Amending, Reuse, paragraph 3.3 of the General Conditions.
B. Copies of applicable referenced standards are not included in the Contract Documents. Where copies of standards are needed by the Contractor for superintendence and quality control of the work, the Contractor shall obtain a copy or copies directly from the publication source and maintain at the jobsite, available to the Contractor's personnel, subcontractors, and Engineer.

C. Quality of Materials: Unless otherwise specified, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and specifications and shall be new, unused, and free from defects and imperfections, when installed or otherwise incorporated in the Work. Material and equipment shall not be used by the Contractor for any purpose other than that intended or specified unless such use is authorized by the Engineer.

D. Where so specified, products or workmanship shall also conform to the additional performance requirements included within the Contract Documents to establish a higher or more stringent standard or quality than that required by the referenced standard.

1.5 OFFSITE INSPECTION

A. When the specifications require inspection of materials or equipment during the production, manufacturing, or fabricating process, or before shipment, such services shall be performed by an independent testing laboratory, or inspection organization acceptable to Engineer in conjunction with or by the Engineer.

B. The Contractor shall give appropriate written notice to the Engineer not less than 30 days before offsite inspection services are required, and shall provide for the producer, manufacturer, or fabricator to furnish safe access and proper facilities and to cooperate with inspecting personnel in the performance of their duties.

C. The inspection organization shall submit a written report to the Contractor who shall provide copies to the Engineer.

1.6 MATERIALS AND EQUIPMENT

A. The Contractor shall maintain control over procurement sources to ensure that materials and equipment conform to specified requirements in the Contract Documents.

B. The Contractor shall comply with manufacturer's printed instructions regarding all facets of materials and/or equipment movement, storage, installation, testing, startup, and operation. Should circumstances occur
where the contract documents are more stringent than the manufacturer’s printed instructions, the Contractor shall comply with the specifications. In cases where the manufacturer’s printed instructions are more stringent than the contract documents, the Contractor shall advise the Engineer of the disparity and conform to the manufacturer’s printed instructions. In either case, the Contractor is to apply the more stringent specification or recommendation, unless approved otherwise by the Engineer.

1.7 SHOP AND FIELD TESTING

A. The Contractor is also responsible for providing the shop and field testing specified in the technical specification sections.

B. The Contractor and its Subcontractor shall perform inspections, tests, and other services as required by the Contract Documents.

C. Contractor shall provide twenty one days notice to the Engineer so that the Engineer may witness Contractor and/or Subcontractors off site and on site tests. The Engineer’s witnessing of tests does not relieve the Contractor and/or Subcontractors of their obligation to comply with the requirements of the Contract Documents.

1.8 MANUFACTURER’S FIELD SERVICES

A. When specified in the technical specifications sections, the Contractor shall arrange for and provide technical representation from manufacturer’s of respective equipment, items or components. The manufacturer's representative shall be a factory trained service engineer/technician with the type and length of experience specified in the technical specifications.

B. Services Furnished Under This Contract: An experienced, competent, and authorized factory trained service engineer/technician representative of the manufacturer of each item of equipment for which field services are indicated in the specifications shall visit the site of the Work and inspect, operate, test, check, adjust if necessary, and approve the equipment installation. In each case, the manufacturer’s service representative shall be present when the equipment is placed in operation. The manufacturer's service representative shall revisit the jobsite as often as necessary until all problems are corrected and the equipment installation and operation are satisfactory to the Engineer.

C. Refer to Section 01730 - Operation and Maintenance Data for additional requirements.
1.9 CERTIFICATION FORMS AND CERTIFICATES

A. The Contractor shall be responsible for submitting the certification forms and certificates in conformance with the requirements specified in Section 01300 - Submittals.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 QUALITY CONTROL

A. Quality control is the responsibility of the Contractor, and the Contractor shall maintain control over construction and installation processes to assure compliance with specified requirements.

B. Certifications for personnel, procedures, and equipment associated with special processes (e.g., welding, cable splicing, instrument calibration, surveying) shall be maintained in the Contractor’s field office, available for inspection by the Engineer. Copies will be made available to the Engineer upon request.

C. Means and methods of construction and installation processes are the responsibility of the Contractor, and at no time is it the intent of the Engineer or Owner to supersede or void that responsibility.

END OF SECTION 01400
SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 PLANT AND HOURS OF CONSTRUCTION

A. Furnish plant and equipment which will be efficient, appropriate, and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the Contract Time. If at any time such plant appears to the Engineer to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he may order the Contractor to increase the efficiency, change the character, or increase the plant equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

B. Burials at Mount Wollaston Cemetery are expected to continue during the course of construction. The Contractor should expect that during burials noises will be asked to cease.

C. The Contractor shall conduct all construction activity between 7:00 a.m. and 5:00 p.m., Monday through Saturday. No construction work shall be allowed on Sundays or Holidays without written authorization from the Owner. No claim for additional payment shall be permitted if the Contractor is authorized to work on Sundays, or Holidays.

D. The Owner will provide personnel for assistance in locating and operating water services, valves, and other of its utilities at no cost to the Contractor during the Owner’s normal working hours (Monday through Friday 8:00 a.m. to 3:00 p.m.). The Contractor shall provide the Owner with a minimum of 72-hours, three (3) business days, notice. When this assistance is required by the Contractor outside of the Owner’s normal working hours the cost will be incurred by the Contractor at the prevailing overtime rate of pay for the personnel providing the assistance. The Owner will bill the Contractor directly.
E. Work in streets, roadways and areas adjacent to them shall cease at noon on days before legal holidays and at noon on Fridays prior to Monday holidays.

1.3 OCCUPYING PRIVATE LAND

A. The Contractor shall not (except after written consent from the proper parties) enter or occupy with men, tools, materials, or equipment any land outside the rights of way or property of the Owner. A copy of the written consent shall be given to the Engineer, prior to entering or occupying private property.

1.4 PIPE LOCATIONS

A. Exterior pipelines will be located substantially as indicated on the Drawings, but the right is reserved to the Owner, acting through the Engineer, to make such modifications in location as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings, etc., are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

B. Small interior piping is indicated diagrammatically on the Drawings, and the exact location is to be determined in the field. Piping shall be arranged in a neat, compact, and workmanlike manner, with a minimum of crossing and interlacing, so as not to interfere with equipment or access ways, and, in general, without diagonal runs.

1.5 DIMENSION OF EXISTING STRUCTURES

A. Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the Work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

1.6 OPEN EXCAVATIONS

A. All open excavations shall be adequately safeguarded by providing temporary barricades, fencing, caution signs, lights, and other means to prevent accidents to persons and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation 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, the Engineer may require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street, and requiring that the trench shall not remain open overnight.

B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night.

1.7 TEST PITS

A. Test pits for the purpose of locating underground pipeline or structures in advance of the construction shall be excavated and backfilled by the Contractor at locations shown on the drawings or in areas where the Contractor deems it necessary to obtain subsurface information. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Engineer.

1.8 INTERFERENCE WITH AND PROTECTION OF STREETS

A. Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefor from the proper authorities. If any street, road or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.

B. Streets, roads, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefore

C. The Contractor shall, at least 24 hours in advance, notify the Police, Fire and School Departments in writing, with a copy to the Engineer, if the closure of a street or road is necessary. He shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion.

1.9 CARE AND PROTECTION OF PROPERTY

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing
before the damage was done, or he shall make good the damage in other manner acceptable to the Engineer.

1.10 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.

B. Assistance will be given the Contractor in determining the location of existing services. The Contractor, however, shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.

C. Protection and temporary removal and replacement of existing utilities and structures as described in this section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the Total Price Bid in the Bid Form.

D. If, in the opinion of the Engineer, permanent relocation of a utility is required, he may direct the Contractor, in writing, to perform the work. Work so ordered will be paid at the Contract unit prices, if applicable, or as extra work under Article 11 of the Supplementary Conditions. If relocation of a privately owned utility is required, the City of Quincy will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the City and Utility, and shall have no claim for delay due to such relocation. The Contractor shall notify all utility companies in writing at least 72 hours (excluding Saturdays, Sundays, and Legal holidays) before excavating in any public way. Contractor shall also notify (Massachusetts Dig Safe, telephone number 1-888-344-7223) at least 72 hours prior to start of work.

E. The Contractor shall coordinate the removal and replacement of traffic loops and signals, if required for the performance of the work, at no additional cost to the Owner.
1.11 INSPECTION OF WORK AWAY FROM THE SITE

A. If work to be done away from the construction site is to be inspected on behalf of the Owner during its fabrication, manufacture, or testing, or before shipment, the Contractor shall give notice to the Engineer of the place and time where such fabrication, manufacture, testing, or shipping is to be done. Such notice shall be in writing and delivered to the Engineer in ample time so that the necessary arrangements for the inspection can be made.

1.12 COOPERATION WITHIN THIS CONTRACT

A. All firms or persons authorized to perform any work under this Contract shall cooperate with General Contractor and his Subcontractors or trades, and shall assist in incorporating the work of other trades where necessary or required.

B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Engineer.

1.13 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

A. During the course of the work, the Contractor shall keep the site of his operations in as clean and as neat a condition as is possible. He shall dispose of all residue resulting from the construction work and, at the conclusion of the work, he shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the work in a neat and orderly condition.

B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his subcontractors shall comply with all applicable Federal, State, and local laws, and regulations concerning waste material disposal, as well as the specific requirements stated in this section and elsewhere in the Specifications.

C. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person employed by him, will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the Contractor will be required to remove the fill at his own expense and restore the area impacted.
1.14 PROTECTION OF CONSTRUCTION AND EQUIPMENT

A. All newly constructed work shall be carefully protected from injury in any way. No wheeling or walking or placing of heavy loads on it shall be allowed and all portions injured shall be reconstructed by the Contractor at its own expense.

B. All structures shall be protected in a manner approved by the Engineer. Should any of the floors or other parts of the structures become heaved, cracked, or otherwise damaged, all such damaged portions of the work shall be completely repaired and made good by the Contractor at his own expense and to the satisfaction of the Engineer.

C. If, in the final inspection of the work, any defects, faults or omissions are found, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship without extra compensation for the materials and labor required. Further, the Contractor shall be fully responsible for the satisfactory maintenance and repair of the construction and other work undertaken herein for at least the guarantee period described in the Contract Documents.

D. The Contractor shall take all necessary precautions to prevent damage to any structure due to water pressure during and after construction and until such structure is accepted and taken over by the Owner.

E. After the buildings have been made watertight and ready for the installation of pumps, motors, piping and other equipment, the interior temperature shall be maintained at a minimum of 50 degrees F and thereafter, until the completion of the Contract, the temperature shall not be allowed to drop below 50° F.

1.15 TEMPORARY UTILITIES

A. Temporary Light and Power: The Contractor shall at his own expense, provide his own temporary light and power as required for the prosecution and completion of work.

B. Temporary Heat: The Contractor shall, at his own expense, provide sufficient temporary heat to maintain a minimum temperature of 50 degrees F at all times in all areas designated elsewhere in these documents.

C. Temporary Telephone: The Contractor shall have installed at his own expense a job telephone for his use and for the use of the Engineer. The Contractor shall pay all phone charges.

D. Temporary Water: Water for drinking purposes and other usage will be provided by the Contractor at his own expense.
E. Sanitary Provisions: The Contractor shall provide and maintain sanitary accommodations for the use of his employees and the Engineer, as may be necessary to comply with the requirements and regulations of the local and state departments of health.

F. Maintaining Operation of the Existing Facilities:

1. The Contractor shall provide temporary utilities to maintain full operation of the existing treatment facility. The Contractor shall be responsible for careful consideration of the construction scheduling and anticipation of potential interference with existing utilities, operations and structures. The Contractor shall maintain close communications with the Engineer and provide the Engineer with a detailed description of each proposed activity sufficiently in advance of its commencement for review and comments to be made.

2. Temporary facilities which may be required include, but are not limited to, electrical power; lighting; heating; cooling; ventilating; telephone; potable water; fire protection; drainage; sanitary facilities; trench covers; protection of existing utilities; structures; streams; trees and shrubs; access roads; sewage conveyance; piping; pumping and sludge disposal.

1.16 WATER SUPPLY

A. For all necessary operations at the site of work (except as noted in the next paragraph below) the Owner, without charge therefor, shall provide reasonable quantities of water at the then existing pressure from a mutually convenient hydrant of the water distribution system. The Contractor shall furnish all pipe or hose extensions and approved backflow prevention devices to conduct the water to the points of use and shall exercise due care not to waste water. The Contractor shall not contaminate the water supply and shall comply with all applicable regulations and code requirements.

B. The Owner reserves the right to limit, suspend, or terminate the supplying of water as set forth above should it consider such action to be necessary on account of damage to the distribution system, the necessity of conserving water, or other emergency. In this event, the Contract shall obtain water from some other approved source, at his own expense.

C. No direct cross connections will be permitted between the public water supply and the new water mains, or any other point where the possibility of backflow of contaminant water exists. All connections to points where there is the possibility of backflow shall be arranged to prevent backflow and shall be approved by the local Plumbing Inspector or Backflow Prevention Inspector before they are put into operation.
1.17 ACCESS TO THE WORK

A. The Contractor shall provide sufficient and proper facilities at all times for inspection of all work under this project in preparation or in progress, by the Owner; agents and employees of the Owner (including the Engineer); and by authorized representatives of local and state agencies.

B. The Contractor shall furnish the Engineer or his authorized representative and other personnel mentioned above with such facilities and assistance as are necessary to ascertain performance of the work in accordance with the plans and specifications.

1.18 DUST CONTROL

A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of water as necessary, so as to minimize the creation and dispersion of dust. If the Engineer decides that it is necessary to use calcium chloride, and it is allowed by local authorities, for more effective dust control, the Contractor shall furnish and apply the material as directed.

B. Calcium chloride shall be commercial grade, furnished in 100 lb, 5-ply bags, stored under weatherproof cover and stacked alternately for ventilation. Application for dust control shall be at the rate of about 1/2 pound per square yard, unless otherwise directed by the Engineer.

1.19 POLLUTION CONTROL

A. The Contractor shall conduct clean-up and disposal operations, as necessary, to comply with state and local ordinances and anti-pollution laws.

B. Outdoor burning of rubbish and waste material on the site will not be permitted.

C. Disposal of volatile fluid wastes (such as mineral spirits, oil, gasoline, or paint thinner) in storm or sanitary sewer systems or into streams or waterways is not permitted.

1.20 ENGINEER'S FIELD TRAILER

A. The Contractor shall provide and maintain at an approved location at or near the site, for the duration of the contract, a separate office trailer, minimum interior dimensions of 8 feet x 20 feet for the exclusive use of the Engineer. The plans and construction of the office shall be approved by the Engineer.

B. The office shall have doors and windows equipped with locks. The office shall
be equipped with the following furniture and accessories:

1. (1) flat top desk with drawers
2. (1) table at least 2 feet 8-inches wide and 6 feet long
3. (1) desk chair
4. (4) folding chairs
5. (1) 5-pound fire extinguisher
6. (1) industrial type first aid kit

C. The Contractor shall maintain the office during construction and remove it upon completion of the work. The cost for operation of the Engineer's field office shall be the responsibility of the Contractor and included into his Bid price.

1.21 PRECAUTIONS DURING ADVERSE WEATHER

A. During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.

B. During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by suitable means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

1.22 PROJECT SIGN

A. The Contractor shall construct a sign having an area of approximately 32 sq. ft. identifying the project, officials representing the Owner, the Engineers, etc. The sign shall be erected in a location selected by the Engineer. The Contractor shall maintain the sign throughout the duration of the project. The sign shall be worded as directed by the Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)
END OF SECTION 01500
SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Closeout procedures.

2. Final cleaning.

3. Adjusting.

1.3 RELATED WORK

A. Operation and Maintenance Data are included in Section 01730.

B. Warranties and Bonds are included in Section 01740.

1.4 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.

B. Provide submittals to Engineer that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payment, and sum remaining due.

D. Submit all warranties.

E. Submit written notice that all subcontractors and suppliers have been paid in full.
F. Submit written notice showing the disparition of all insurance filings and claims.

G. Copy of “Statement of Compliance” filed with the Division of Labor and Workforce Development, as required under the State Wage Rate Provisions.

1.5 FINAL CLEANING

A. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

1. Remove labels that are not permanent labels.

2. Clean exposed exterior and interior hard-surfaces finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean.

3. Contractor shall have the installing Subcontractor shall wipe surface of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

4. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

1.6 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01700
SECTION 01710

CLEANING UP

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. During its progress, the work and the adjacent areas affected thereby shall be cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.

B. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.

C. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.

D. The Contractor shall thoroughly clean all materials and equipment installed by him and his sub-contractors, and on completion of the work shall deliver it undamaged and in fresh and new-appearing condition. All mechanical equipment shall be left fully charged with lubricant and ready for operation.

E. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a
condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01710
SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

1.3 RELATED WORK

A. Refer to General Conditions of the Contract for the general requirements relating to warranties and bonds.

B. General closeout requirements are included in Section 01700 Project Closeout.

C. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Division 2 through 3.

D. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

1.4 SUBMITTALS

A. Submit written warranties to the Owner prior to the date fixed by the Engineer for Substantial Completion. If the Certificate of Substantial Completion designates a commencement data for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Owner.

B. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within fifteen days of completion of that designated portion of the Work.
C. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Engineer for approval prior to final execution.

D. Refer to individual Sections of Divisions 2 through 3 for specific content requirements, and particular requirements for submittal of special warranties.

E. At Final Completion, compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

F. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-in. by 11-in. paper.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification Section in which specified, and the name of the product or work item.

H. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer, supplier, and manufacturer.

I. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS," the Project title or name, and the name, address, and telephone numbers of the Contractor and equipment supplier.

J. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.5 WARRANTY REQUIREMENT

A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights or remedies.

E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

F. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

G. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.6 DEFINITION

A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION 01740
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02020</td>
<td>Erosion and Sediment Control</td>
</tr>
<tr>
<td>02050</td>
<td>Demolition and Alterations</td>
</tr>
<tr>
<td>02100</td>
<td>Site Preparation</td>
</tr>
<tr>
<td>02160</td>
<td>Temporary Excavation Support Systems</td>
</tr>
<tr>
<td>02200</td>
<td>Earthwork</td>
</tr>
<tr>
<td>02431</td>
<td>Catchbasins</td>
</tr>
<tr>
<td>02480</td>
<td>Landscaping</td>
</tr>
<tr>
<td>02525</td>
<td>Paving, Sidewalks and Curbing</td>
</tr>
<tr>
<td>02601</td>
<td>Manholes</td>
</tr>
<tr>
<td>02622</td>
<td>Polyvinyl Chloride Gravity Pipe</td>
</tr>
<tr>
<td>02647</td>
<td>Connecting to Existing Water Mains</td>
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<tr>
<td>02660</td>
<td>Water Systems</td>
</tr>
<tr>
<td>02675</td>
<td>Disinfection of Water Mains</td>
</tr>
<tr>
<td>02704</td>
<td>Pipeline Pressure and Leakage Testing</td>
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<td>02736</td>
<td>Temporary Connections</td>
</tr>
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<td>02811</td>
<td>Irrigation System</td>
</tr>
<tr>
<td>02850</td>
<td>Topsoil</td>
</tr>
<tr>
<td>02860</td>
<td>Turf</td>
</tr>
<tr>
<td>02901</td>
<td>Miscellaneous Work and Cleanup</td>
</tr>
</tbody>
</table>
SECTION 02020

EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies equipment and materials for an erosion and sediment control program for minimizing erosion and siltation during the construction phase of the project. The erosion and sediment control provisions detailed on the Drawings and specified herein are the minimum requirements for erosion controls. The Contractor shall provide additional erosion and sediment control materials and methods as required to affect the erosion and siltation control principles specified herein.

1.2 RELATED SECTIONS

A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section. Related Sections include the following:

1. Section 01500 – Temporary Facilities and Controls

2. Section 02100 – Site Preparation

3. Section 02200 - Earthwork

1.3 SUBMITTALS

A. Proposed methods, materials to be employed, and schedule for effecting erosion and siltation control and preventing erosion damage shall be submitted for approval. Submittals shall include:

1. List of proposed materials including manufacturer’s product data.

2. Perimeter (Limit of Work) Erosion Controls damaged during construction shall be replaced immediately and installed per the Details. Schedule of any additional erosion control program indicating specific dates for implementing programs in each major area of work, including dewatering sedimentation basin(s) shall be submitted prior to installation.

B. Samples

The following samples shall be submitted:

<table>
<thead>
<tr>
<th>Sample</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wattle</td>
<td>9-inch-diameter</td>
</tr>
</tbody>
</table>
1.4 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

1. Massachusetts Department of Public Works, and The Commonwealth of Massachusetts Department of Public Works; Construction Standards.

2. Massachusetts Department of Environmental Protection.

1.5 EROSION CONTROL PRINCIPLES

A. Erosion Control Principles

The following erosion control principles shall apply to the land grading and construction phases:

1. Stripping of vegetation, grading, or other soil disturbance shall be done in a manner which will minimize soil erosion.

2. Whenever feasible, natural vegetation shall be retained and protected.

3. Extent of area which is exposed and free of vegetation and duration of its exposure shall be kept within practical limits.

4. Temporary seeding, mulching, or other suitable stabilization measures shall be used to protect exposed critical areas during prolonged construction or other land disturbance. Prolonged exposure of unstabilized soil shall not exceed 60 days.

5. Drainage provisions shall accommodate increased runoff resulting from modifications of soil and surface conditions during and after development or disturbance. Such provisions shall be in addition to existing requirements.

6. Sediment shall be retained on-site.

7. Dewatering sedimentation basin(s) shall be installed prior to dewatering operations. Dewatering basins shall not be installed within 50 feet of a wetland boundary.

B. Erosion Protection

Cut and fill slopes and stockpiled materials shall be protected to prevent erosion. Slopes shall be protected with permanent erosion protection when erosion exposure period is expected to be greater than or equal to two months, and temporary erosion protection when erosion exposure period is expected to be less than two months.

1. Permanent erosion protection shall be accomplished by seeding with grass and covering with an erosion protection material, as appropriate for prevailing conditions.
2. Temporary erosion protection shall be accomplished by covering with an erosion protection material, as appropriate for prevailing conditions.

3. Except where specified slope is indicated on Drawings, fill slopes shall be limited to a grade of 3:1 (horizontal: vertical) cut slopes shall be limited to a grade of 2:1.

PART 2 - PRODUCTS

2.1 STRAW WATTLES

A. Straw wattles for construction of erosion control devices shall be new, firm, bound wheat straw bound with natural jute netting, as a minimum, installed where shown on the plans.

A. Wattles shall consist of the following:

<table>
<thead>
<tr>
<th>Wattle Type</th>
<th>9&quot; Wattle</th>
<th>9&quot; Wattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>9&quot;</td>
<td>9&quot;</td>
</tr>
<tr>
<td>Length</td>
<td>10'</td>
<td>25'</td>
</tr>
<tr>
<td>Density</td>
<td>2 lbs./lf</td>
<td>2 lbs./lf</td>
</tr>
<tr>
<td>Filling</td>
<td>Wheat Straw</td>
<td>Wheat Straw</td>
</tr>
<tr>
<td>Netting</td>
<td>Natural Jute Netting</td>
<td>Natural Jute Netting</td>
</tr>
</tbody>
</table>

2.2 TEMPORARY SEED COVER

A. If required, seed mixture for temporary cover by hydroyeeding application shall conform to the following:

<table>
<thead>
<tr>
<th>Quantity per 1000 sq. ft. Coverage</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-1/2 lb.</td>
<td>Wood Fiber Mulch</td>
</tr>
<tr>
<td>4 lb.</td>
<td>Seed</td>
</tr>
<tr>
<td>1/2 lb.</td>
<td>Annual Ryegrass</td>
</tr>
<tr>
<td>22 lb.</td>
<td>10-6-4 Fertilizer</td>
</tr>
<tr>
<td>69 gal.</td>
<td>Water</td>
</tr>
</tbody>
</table>

B. Hydroyeeding Equipment

Hydroyeeding equipment may be either portable or truck mounted, with dual agitation, a minimum working volume of 1000 gallons and a minimum spray range of 80 ft.

1. Hydroyeeding equipment must be capable of uniformly applying the slurry mix including wood fiber mulch if required, at the specified rate, and at the required locations.
2. Hydromulching equipment, either trailer or truck mounted, must be capable of uniformly applying straw or hay mulch at a minimum mulching rate of 8 tons per hour, at a distance of not less than 80 ft.

2.3 EROSION CONTROL BLANKET

A. All loam and seeded slopes 3:1 or steeper shall have erosion control blanket installed.

B. Erosion control blanket shall be Curlex CL as manufactured by American Excelisor or engineer approved equal.

PART 3 - EXECUTION

3.1 WATTLE DIKES

A. Wattles shall be constructed and installed as indicated on the Drawings or as necessary to control run-off during contractors' site work operations. Wattles shall be placed in a row with ends tightly abutting the adjacent wattles. Each wattle shall be embedded in the soil a minimum of 4 in. Wattles shall be securely anchored in place by wooden stakes driven through the wattles. The first stake in each wattle shall be angled toward the previously laid wattle to force the wattles together.

3.2 HAY WATTLE CHECK DAM

A. Check dams shall be constructed and installed as necessary to control site runoff from stormwater or dewatering operations.

3.3 HYDROSEEDING

A. If required for long-term disturbance greater than 60 days, seed for temporary cover shall be spread by the hydroseeding method, utilizing power equipment commonly used for that purpose. Seed, fertilizer, mulch and water shall be mixed and applied to achieve application quantities specified. Material shall be applied in 2 equal applications, with the equipment during the second pass moving perpendicular to direction employed during the first pass. Hydrosowing shall not be done when it is raining or snowing, or when wind velocity exceeds 5 mph.

B. If the results of hydroseeding application are unsatisfactory, the mixture and/or application rate and methods shall be modified to achieve the required results.

C. After the grass has appeared, all areas and parts of areas which fail to show a uniform stand of grass, for any reason whatsoever, shall be reseeded and such areas and parts of areas seeded repeatedly until all areas are covered with a satisfactory growth of grass.
3.4 MAINTENANCE AND REMOVAL OF EROSION CONTROL DEVICES

A. Wetland area, water courses, and drainage swales adjacent to construction activities shall be monitored continuously for evidence of silt intrusion and other adverse environmental impacts, which shall be corrected immediately upon discovery.

B. Culverts and drainage ditches shall be kept clean and clear of obstructions during construction period.

C. Erosion Control Devices

1. Sediment behind the erosion control device shall be checked twice each month and after heavy rain. Silt shall be removed if greater than 6 in. deep.

2. Condition of erosion control devices shall be checked twice each month or more frequently as required. Damaged and/or deteriorated items shall be replaced. Erosion control devices shall be maintained in place and in effective condition.

3. Hay wattles shall be inspected frequently and maintained or replaced as required to maintain both their effectiveness and essentially their original condition. Underside of wattles shall be kept in close contact with the earth below at all times, as required to prevent water from washing beneath wattles.

4. Sediment deposits shall be properly disposed of, in a location and manner which will not cause sediment nuisance elsewhere.

D. Removal of Erosion Control Devices

1. Erosion control devices shall be maintained until all disturbed earth has been paved or vegetated, at which time they shall be removed. After removal, areas disturbed by these devices shall be regraded and seeded.
SECTION 02050

DEMOLITION AND ALTERATIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Demolish and alter existing facilities as indicated on drawings, as specified, and as directed by Engineer.

2. Remove, salvage, or otherwise dispose of minor site improvements as specified in Section 02100, Site Preparation.

B. Related sections include the following:

1. Section 02100 - Site Preparation

2. Section 02210 - Earth Excavation, Backfill, Fill and Grading.

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:

1. Submit to Engineer for review, a demolition plan describing proposed sequence, methods, and equipment for demolition and/or disposal of each structure, pipeline and roadways.

1.4 QUALITY ASSURANCE

A. Provide in accordance with Section 01400 and as specified.

B. Demolish and remove existing construction, utilities, equipment, and appurtenances without damaging integrity of existing structures, equipment, and appurtenances that are to remain.
C. Store equipment to be salvaged for relocation where directed by Engineer, and if necessary, protect from damage during work.

D. Repair or remove items that are damaged. Repair and install damaged items at no additional compensation and to condition at least equal to that which existed prior to start of work.

E. Exercise all precautions for fire prevention. Make acceptable fire extinguishers available at all times in areas where demolition work by burning torches is being done. Do not burn demolition debris on or near site.

F. Protect persons and property throughout progress of work. Proceed in such manner as to minimize spread of dust and flying particles and to provide safe working conditions for personnel.

G. Maintain circulation of traffic within area at all times during demolition operations.

H. Obtain permission from Engineer before abandoning or removing any existing structures, materials, equipment and appurtenances.

I. Make arrangements with and perform work required by utility companies and municipal departments for discontinuance or interruption of utility services due to demolition work.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REFERENCES

A. Provide three reference points for each survey marker and monument removed, established by a licensed civil engineer or land surveyor and record locations and designations of survey markers and monuments prior to removal.

B. Store removed markers and monuments during demolition work, and replace upon completion of work. Reestablish survey markers and monuments in conformance with recorded reference points. Forward letter to Engineer signed by licensed civil engineer or land surveyor verifying reestablishment of survey markers and monuments.
3.2 MISCELLANEOUS

A. Confine apparatus, storage of materials, demolition work, new construction, and operations of workmen to areas that will not interfere with continued use and operation of entire facility. Provide and maintain lights, barriers, and temporary passageways for free and safe access.

B. Wet down work during demolition operations to prevent dust from arising. Provide maximum practicable protection from inclement weather for materials, equipment, and personnel located in partially dismantled structures. Provide shoring or bracing where necessary to prevent settlement or displacement of existing or new structures.

C. Cap or plug with brick and mortar, as indicated, pipes and other conduits abandoned due to demolition.

3.3 SALVAGE

A. Materials, equipment, and appurtenances removed, that are not designated for relocation, or future use by Owner shall become property of Contractor. Haul from site and dispose of at no additional compensation.

3.4 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02050
SECTION 02100
SITE PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY
A. This section includes the following:
   1. Provide labor, material, tools and equipment to prepare site as indicated and specified.

B. Related sections include the following:
   1. Section 02200: Earthwork.

PART 2 - PRODUCTS

2.1 WOOD CHIPS
A. Chip from cleared wood.
B. Provide additional wood chips as directed by Engineer. needed.
C. Do not permit use of elm wood and elm bark as wood chips.

PART 3 - EXECUTION

3.1 EXISTING HEADSTONES, MARKERS AND MONUMENTS
A. Avoid damage to headstones, markers, and monuments that abut the limit of work areas. Protect existing trees from damage.
B. The Contractor shall accept responsibility for damages.
3.2 EXISTING TREES AND VEGETATION

A. Avoid cutting or injuring trees and other vegetation, without Engineer’s permission. Protect existing trees from damage.

B. The Contractor shall accept responsibility for damages to trees.

C. For work in loamed areas, strip loam to one side to avoid mixing with excavation materials. Do not take loam from site.

3.3 EXISTING STRUCTURES AND PROPERTY

A. Protect existing signs, posts, catchbasin frames and grates, manhole frames and covers, and granite curbing within construction path unless directed otherwise.

B. The Contractor shall accept responsibility for damages to structures and property.

C. Store at a site designated by Owner, items in reusable condition as determined by Engineer.

3.4 CLEARING

A. Clearing is not anticipated and is prohibited without prior written consent of the Quincy Park and Forestry Department.

B. Only if approved to complete the work:

a. Cut or remove designated trees, brush, and other vegetable matter such as snags, bark and refuse, from areas to be cleared. Clear ground to width of permanent easement unless otherwise directed.

b. Cut trees, stumps, and stubs to be cleared, except where clearing done by machinery, as close to ground surface as practicable, but no more than 6 in. above ground surface for small trees and 12 in. for larger trees.

c. Bury elm bark, at least 1 ft. deep, or burn in incinerators off site with anti-pollution controls and fire prevention controls, to prevent spread of Dutch Elm disease as required by applicable laws.

d. Chip and spread wood cleared at locations and cover as indicated. Do NOT PERMIT use of elm wood and elm bark as wood chips.

e. Supply and spread wood chips.
3.5 GRUBBING, STRIPPING, DISPOSAL

A. Grubbing of roots may be required as being incidental to the installation of new water pipe. Clearing of trees and removal of stumps is prohibited without prior written approval from the Quincy Park and Forestry Department.

B. Remove stumps and roots larger than 3 in. in diameter to a depth of 12 in., and roots larger than 1/2 in. in diameter to a depth of 6 in. Measure depths to cut from existing ground surface or proposed finished grade, whichever is lower.

C. Strip stumps, roots, foreign matter, topsoil, loam and unsuitable earth from ground surface. Utilize topsoil and loam insofar as possible for finished surfacing. Do not take loam from site.

D. Promptly dispose off site material from clearing and grubbing not reused or stockpiled. In doing so, observe all applicable laws, ordinances, rules and regulations. Do not consider work completed until final cleaning, unless otherwise directed.

3.6 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02100
SECTION 02160
TEMPORARY EXCAVATION SUPPORT SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes the following:

1. Design, furnish and install temporary excavation support systems as required to maintain lateral support, prevent loss of ground, limit soil movements to acceptable limits and protect from damage existing and proposed improvements including, but not limited to, pipelines, utilities, structures, roadways, and other facilities.

2. Common types of excavation support system include, but are not limited to, singular or multiple stages comprised of cantilevered or internally braced soldier piles and lagging, steel sheetpile wall, timber sheetpile wall, trench box, or combinations thereof. Trench box temporary excavation support system is only acceptable for pipe or utility trench excavations. Temporary unsupported open cut excavation with stable sloping sides is allowed where applicable.

3. Wherever the word "sheeting" is used in this section or on the contract drawings, it shall be in reference to any type of excavation support system specified except trench box.

4. Construction of the temporary excavation support systems shall not disturb the existing structures or the completed proposed structures. Damage to such structures shall be repaired by the Contractor at no additional cost to the Owner.

5. The Contractor shall bear the entire cost and responsibility of correcting any failure, damages, subsidence, upheaval or cave-ins as a result of improper installation, maintenance or design of the temporary excavation support systems. The Contractor shall pay for all claims, costs and damages that arise as a result of the work performed at no additional cost to the Owner.

1.2 RELATED SECTIONS

A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section. Related Sections include the following:

1. Section 02200 – Earthwork

1.3 SUBMITTALS

A. Shop Drawing: Submit the following in accordance with Section 01300 - SUBMITTALS:

1. Submit the following qualifications four (4) weeks prior to the construction:
a. Qualifications of Contractor's temporary excavation support system designer as specified in Paragraph 1.4 D.

b. Qualifications of Contractor's temporary excavation support system installer as specified in Paragraph 1.4 E.

c. Qualifications of Contractor's independent tieback testing laboratory as specified in Paragraph 1.4 F, if a tieback system is utilized.

d. Qualifications of Contractor's temporary excavation support system installation supervisor as specified in Paragraph 1.4 G.

2. Submit a temporary excavation support plan stamped and signed by a Massachusetts Registered Professional Engineer at least two weeks prior to start of the construction. Do not submit design calculations. The review will be only for the information of the Owner and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include the following items as a minimum:

a. Proposed temporary excavation support system(s), details, location, layout, depths, extent of different types of support relative to existing features and the permanent structures to be constructed, and methods and sequence of installation and removal.

b. Certificate of Design: Refer to Section 01300 for form.

c. If utilizing a tieback system, include tieback installation procedures and criteria for acceptance of tiebacks for performance and proof tests. Submit the tieback testing results to the Engineer for information only.

d. Requirements of dewatering during the construction, per Section 02140.

e. Minimum lateral distance from the edge of the excavation support system for use for vehicles, construction equipment, and stockpiled construction and excavated materials.

f. List of equipment used for installing the excavation support systems.

g. A plan to monitor movements of the ground adjacent to excavation support systems and adjacent structures. The plan shall include, but not be limited to locations, details and monitoring schedule of geotechnical instruments such as survey markers (reference points on structures).

3. Submit a Construction Contingency Plan specifying the methods and procedures to maintain temporary excavation support system stability if the allowable movement of the adjacent ground and adjacent structures is exceeded.

4. For excavation support systems left in place, submit the following as-built information prior to backfilling and covering the excavation support systems:
a. Survey locations of the temporary excavation support systems', including coordinates of the ends and points of change in direction.

b. Type of the temporary excavation support system.

c. Elevations of top and bottom of the excavation support systems left in place.

1.4 QUALITY ASSURANCE

A. Provide in accordance with Section 01400 and as specified.

B. Conform to the requirements of the OSHA Standards and Interpretations: "Part 1926 Subpart P - Excavation, Trenching, and Shoring", and all other applicable laws, regulations, rules, and codes.

C. All welding shall be performed in accordance with AWS D1.1.

D. Prepare design, including calculations and drawings, under the direction of a Professional Engineer registered in Massachusetts and having the following qualifications:

1. Not less than ten (10) years experience in the design of specific temporary excavation support systems to be used.

2. Completed not less than five (5) successful temporary excavation support system projects of equal type, size, and complexity within the last five (5) years.

E. Temporary Excavation Support System Installer's Qualifications:

1. Not less than three (3) years experience in the installation of similar types and equal complexity as the proposed system.

2. Completed not less than three (3) successful excavation support systems of similar type and equal complexity as the proposed system.

F. If utilizing a tieback system, employ an independent testing laboratory to test the tieback system with the following qualifications:

1. Be accredited by the American Association of State Highway and Transportation Officials (AASHTO) Accreditation Program.

2. Employ personnel conducting testing who are trained in the methods and procedures to test and monitor tieback systems of similar type and equal complexity, as the proposed system.

3. Have not less than five (5) years experience in testing of tieback systems of similar type and equal complexity as the proposed system.
4. Have successfully tested at least three (3) tieback systems of similar type and equal complexity as the proposed system.

G. Install all temporary excavation support systems under the supervision of a supervisor having the following qualifications:

1. Not less than five (5) years experience in installation of systems of similar type and equal complexity as the proposed system.

2. Completed at least five (5) successful temporary excavation support systems of similar type and equal complexity as the proposed system.

1.5 DESIGN CRITERIA

A. Design of temporary excavation support systems shall meet the following minimum requirements:

1. Support systems shall be designed for earth pressures, hydrostatic pressure, equipment, temporary stockpiles, construction loads, and other surcharge loads.

2. Design a bracing system to provide sufficient reaction to maintain stability.

3. Limit movement of ground adjacent to the excavation support system to be within the allowable ground deformation as specified.

4. Design the embedment depth below bottom of excavation to minimize lateral and vertical earth movements and provide bottom stability. Toe of braced temporary excavation support systems shall not be less than 5 feet below the bottom of the excavation.

5. Design temporary excavation support systems to withstand an additional 2 feet of excavation below proposed bottom of excavation without redesign except for the addition of lagging and/or bracing.

6. Maximum width of pipe trench excavation shall be as indicated on the drawings.

7. Do not cast permanent structure walls directly against excavation support walls.

1.6 DELIVERY, STORAGE AND HANDLING

A. Store sheeting and bracing materials to prevent sagging which would produce permanent deformation. Keep concentrated loads which occur during stacking or lifting below the level which would produce permanent deformation of the material.

1.7 PROJECT/SITE CONDITIONS

A. Subsurface Conditions: Refer to Appendix F of the Specifications.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Structural Steel: All soldier piles, wales, rakers, struts, wedges, plates, waterstop and accessory steel shapes shall conform to ASTM A36.

B. Steel Sheet Piling: ASTM A328, continuous interlocking type.

C. Timber Lagging Left in Place: Pressured treated per appropriate AWPA standards.

D. Tieback Tendons: Tieback tendons shall be high strength steel wire strand cables conforming to ASTM A416, or bars conforming to ASTM A722. Splicing of individual cables shall not be permitted.

E. Raker Ties: ASTM A615 Grade 60.

F. Cement Grout Materials and Admixtures for Tieback Anchorages: Grout cube strength shall be a minimum 3500 psi at 7 days and 5000 psi at 28 days.

G. Concrete: Refer to Section 03300 – Cast-In-Place Concrete.

H. Tamping tools adapted for backfilling voids after removal of the excavation support system.

I. Provide specific trench box sizes for each pipe and utility excavation with structural capacity of retaining soil types as described in OSHA’s 29 CFR Part 1926 Subpart P.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation of the temporary excavation support systems shall not commence until the related earth excavation and dewatering submittals have been reviewed by the Engineer with all Engineer’s comments satisfactorily addressed.

B. Install excavation support systems in accordance with the temporary excavation support plan.

C. If utilizing a tieback system, all performance and proof tests shall be conducted in the presence of the Engineer. Testing performed without the Engineer present will not be accepted. Repeat testing in the Engineer’s presence at no additional cost to the Owner.

D. Do not drive sheeting within 100 feet of concrete less than seven (7) days old.

E. Carry out program of temporary excavation support in such a manner as to prevent undermining or disturbing foundations of existing structures of work ongoing or previously completed.
F. Bottom of the trench box excavation support system shall be above the pipe invert prior to installing the pipe.

G. Install and survey geotechnical instrumentation in accordance with the temporary excavation support plan. Notify the Engineer immediately if any geotechnical instrumentation is damaged. Repair or replace damaged geotechnical instrumentation at the sole option of the Engineer and at no additional cost to the Owner.

H. Continuously monitor movements of the ground adjacent to excavation support systems and adjacent structures. In event of the measured movements approaching or exceeding the allowable movements, take immediate steps to arrest further movement by revising procedures such as providing supplementary bracing, filling voids behind the trench box, supporting utilities or other measures (Construction Contingency Plan) as required.

I. Notify utility owners if existing utilities interfere with the temporary excavation support system. Modify the existing utility with the utility owners permission or have the utility owner make the modifications at no additional cost to Owner.

3.2 GROUND DEFORMATION ADJACENT TO EXCAVATION SUPPORT SYSTEMS

A. Criteria for “threshold” and “limiting” movements of wall elements of excavation support system have been established as follows:

1. “Threshold” Horizontal Movement:

   \[ D_x = \text{No greater than 1.25 inch where no buildings are present within 25 ft. of support system} \]

   \[ D_x = \text{No greater than 0.5 inch where buildings are present within 25 ft. of support system.} \]

   Where

   \[ D_x = \text{measured horizontal wall movement at any level.} \]

2. “Limiting” Horizontal Movement:

   \[ D_x = \text{No greater than 2.0 inches where no buildings are present within 25 ft. of support system} \]

   \[ D_x = \text{No greater than 0.75 inch where buildings are present within 25 ft. of support system.} \]

B. The Contractor shall notify the Engineer and shall take immediate steps to control further movement by revising his procedures, providing supplemental bracing or other measures (working 24 hours per day or temporarily terminating work in the area of movement if necessary) as required if any of the following occur:

   1. Field measurements indicate that any of the “threshold” movement criteria are reached or exceeded.
2. Field measurements or observations indicate that significant or sustained wall movements are occurring (total movement may be less than the “Limiting” movement criteria).

3. Movements of adjacent structures, utilities or other facilities are detected.

C. If “Limiting” movements are being approached or reached, the Engineer, based on his judgment and review of the movement monitoring data, may require the Contractor to temporarily terminate the work in the area where such movement is occurring and implement all necessary mitigation measures which are satisfactory to the Engineer, to arrest the movements, at no cost to the Owner.

D. Horizontal or vertical movement of any point on adjacent structures shall not exceed 0.5 inches. The Contractor shall establish and monitor survey points on the adjacent structures. The Contractor shall take all necessary measures to prevent greater settlements, at no additional cost to the Owner.

E. These criteria are intended to establish a minimum basis for the Contractor’s design and procedures and in no way relieve the Contractor of his sole responsibility for preventing detrimental movements and damage to adjacent structures, utilities or other work.

F. Monitoring personnel shall use a procedure for reading and recording geotechnical instrumentation data which compares the current reading to the last reading during data collection to eliminate spurious readings.

G. Plot the observed ground deformation readings versus time. Annotate the plots with construction loading and excavation events having an impact on the readings. Evaluate plots by means of secondary rate-of-change plots to provide early warning of accelerating ground movements.

H. Implement Construction Contingency Plan under direction of the temporary excavation support system designer, installation supervisor and the Engineer.

3.3 REMOVAL OF EARTH RETENTION SYSTEM

A. Sheetings shall not be left in place unless otherwise indicated or approved in writing by the Engineer.

B. When indicated or approved by the Engineer, remove the temporary excavation support system without endangering the constructed or adjacent structures, utilities, or property. Immediately backfill all voids left or caused by withdrawal of temporary excavation support systems with bank-run gravel, screened gravel or select borrow by tamping with tools specifically adapted for that purpose.

C. When tiebacks are used, release tension in tiebacks as the excavation is backfilled. Do not leave tensioned tieback in place at the completion of the work.
D. The excavation support system left-in-place shall be cut-off a minimum of 2 feet below the bottom of the next higher foundation level or a minimum of 5 feet below finished grade.

E. Conduct survey of the locations and final cut-off elevations of the excavation support systems left in place.

F. Submit as-built information, prior to backfilling.

3.4 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02160
SECTION 02200
EARTHWORK

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes excavations of normal depth in earth for trenches and structures; backfilling such excavations to the extent required; filling; rough grading; constructing embankments; miscellaneous earth excavation; temporary excavation support; the removal, hauling and stockpiling of suitable excavated material for subsequent use in the work; all rehandling, hauling and placing of stockpiled materials for use in refilling, filling, backfilling, grading and such other operations; the removal and satisfactory disposal off the site of unsuitable material; compaction; and appurtenant work, complete, in accordance with the Drawings and Specifications, and as directed.

B. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section. Related Sections include the following:

1. Section 02160 – Temporary Excavation Support Systems

1.2 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Backfill Materials: If requested by the Engineer, submit a grain size analysis and curve performed in accordance with ASTM D422 for each proposed source of backfill for review by the Engineer. The grain size analysis shall indicate that the backfill material conforms to the gradation requirements specified.

C. If requested by the Engineer, submit a grain size analysis and a constant head permeability result in accordance with ASTM D422 and ASTM D2434 respectively for each proposed source of the drainage sand for review by the Engineer.

D. If requested by the Engineer, submit a controlled density fill (CDF) mix design showing the proportions and gradations of all materials.

E. If requested by the Engineer, submit a moisture-density curve indicating the maximum dry-density and optimum moisture content as determined by ASTM D1557 for each proposed source of backfill for review by the Engineer.

F. Submit the qualifications of the independent geotechnical testing laboratory performing soil testing and inspection services during earthwork operations. The geotechnical testing laboratory must demonstrate to the Engineer's satisfaction, based on evaluation of laboratory submitted criteria conforming to ASTM D3740, that it has the experience and capability to conduct required field and laboratory geotechnical testing. In addition, the laboratory shall
be supervised by a Massachusetts Registered Professional Engineer.

G. Submit an excavation, backfilling, and filling plan at least one week prior to start of any earth moving activities. The review will be only for the information of the Owner and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include, but not be limited to the following items:

1. Detailed sequence of work.

2. General description of construction methods.

3. Numbers, types, and sizes of equipment proposed to perform excavation and compaction.

4. Details of dust control measures.

5. Proposed locations of stockpiled excavation and/or backfill materials.

6. Proposed surplus excavated material off-site disposal areas and required permits.

1.3 EXCAVATION CLASSIFICATIONS

A. Earth Excavation or "Excavation" consists of removal of materials encountered to the subgrade elevations indicated and subsequent reuse or disposal of the materials removed. All excavation is classified as earth excavation unless it otherwise meets the classifications provided below for exploratory excavation, unauthorized excavation, additional excavation, or rock excavation.

B. Exploratory Excavation, also referred to as test pits, shall consist of the removal of materials for the purpose of locating underground utilities or structures as an aid in establishing the precise location of new work. Exploratory excavation shall be performed as shown on the plans and as directed by the Engineer. Exploratory excavation not directed or approved by the Engineer shall be at the Contractor's expense.

C. Unauthorized Excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at Contractor's expense.

D. Additional Excavation:

1. When excavation has reached required subgrade elevations, notify the Engineer who will review subgrade conditions.

2. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by the Engineer.
3. Removal of unsuitable material and its replacement as directed will be paid on the basis of contract conditions relative to changes in work or as provided for under the unit rates for this classification.

E. Rock Excavation:

1. Rock excavation in trenches and pits includes removal and disposal of materials and obstructions encountered which cannot be excavated with a 1.0 cubic yard (heaped) capacity, 42-inch wide bucket on track-mounted power excavator equivalent to Caterpillar Model 215, rated at not less than 90HP flywheel power and 30,000 lb. drawbar pull. Trenches in excess of 10 foot 0-inches in width and pits in excess of 30 feet 0-inches in either length or width are classified as open excavation.

2. Rock excavation in open excavations includes removal and disposal of materials and obstructions encountered which cannot be dislodged and excavated with modern track-mounted heavy-duty excavating equipment without drilling, blasting or ripping. Rock excavation equipment is defined as Caterpillar Model No. 973 or No. 977K, or equivalent track-mounted loader, rated at not less than 170HP flywheel power and developing 40,000 lb. break-out force (measured in accordance with SAE J732C).

3. Determination of rock excavation classification will be made by the Engineer. Typical of materials classified as rock are boulders 1.0 cu. yd. or more in volume, solid rock, rock in ledges, and rock-hard cementitious aggregate deposits. Intermittent drilling, blasting or ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation. Do not perform rock excavation work until material to be excavated has been cross-sectioned and classified by Engineer. If the area to be excavated is preblasted prior to the excavation of overburden soils, the Engineer shall be notified at least two days in advance to allow observation of the preblast drilling by the Engineer in order to classify the excavation. Visual observation of the completed excavation may be made by the Engineer to modify the excavation classifications. Removal of rock excavation prior to classification by the Engineer shall be considered as earth excavation unless accepted by the Engineer in writing. Such excavation will be paid on the basis of contract unit rates for this classification.

4. Rock payment lines are limited to the following:

   a. Two feet outside of concrete work for which forms are required, except footings.
   b. One foot outside perimeter of footings.
   c. In pipe trenches, depth limits shall be 6-inches below bottom of pipe with a minimum payment depth of 3 feet of rock excavated with blasting and a minimum payment depth of 6-inches of rock excavated with power tools or by mechanical means. Width payments limits shall be according to the following table:

<table>
<thead>
<tr>
<th>Depth From Ground Surface to Invert of Pipe</th>
<th>Pay Width (Pipe I.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 12'</td>
<td>0 - 24'' over 24''</td>
</tr>
<tr>
<td>0 to 12'</td>
<td>5'- 0''</td>
</tr>
<tr>
<td>0 to 12'</td>
<td>Pipe I.D. +3'-0''</td>
</tr>
</tbody>
</table>

Mt. Wollaston Cemetery Improvements
Quincy, MA
2016-086
EARTHWORK
02200-3
d. Rock sloping across the width of trench shall have the top of rock established at the rock elevation over the centerline of the pipe.

e. Rock excavation within the limits of tunneling or which are included under other items of work will not be considered as rock excavation.

1.4 EXCAVATION

A. The Contractor shall perform all excavations of every description and of whatever substances encountered, in a manner as required to allow for placing of temporary earth support, forms, installation of pipe and other work, and to permit access to the Engineer for the purpose of observing the work. Excavations shall be to such widths as will give suitable space for the required work. Bottoms of trenches and excavations shall be protected from frost and shall be firm, dry and in an acceptable condition to receive the work; work shall not be placed on frozen surfaces nor shall work be placed on wet or unstable surfaces.

B. All excavations made in open cut will be controlled by the conditions existing at the various locations and shall always be confined to the limits as designated by the Engineer. In no case shall earth be excavated or disturbed by machinery so near to the finished subgrade for structures and pipelines as to result in the disturbance of the earth below the subgrade. The final excavation to subgrade should be accomplished with a smooth faced bucket or by hand if directed by the Engineer.

C. The Contractor shall satisfy all dewatering requirements specified in Section 02140 – Dewatering before performing trench excavations.

1.5 TEMPORARY EARTH SUPPORT

A. The Contractor shall furnish, place and maintain such sheeting, shoring, and bracing at locations necessary to support the sides of excavations and to prevent danger to persons or damage to pavements, facilities, utilities, or structures, and to prevent injurious caving or erosion or the loss of ground, and to maintain pedestrian and vehicular traffic as directed and required.

B. In all sheeting, shoring and bracing operations, care shall be taken to prevent injury to persons or damage to structures, facilities, utilities and services. Any injuries to persons shall be the responsibility of the Contractor; and any damage to the work occurring as a result of settlement, water or earth pressure, or other causes due to inadequate bracing or other construction operations of the Contractor shall be satisfactorily repaired or made good by the Contractor, at no additional expense to the Owner.

C. Where sheeting is to be used, it shall be driven ahead of excavation operations to the extent practicable so as to avoid the loss of material from behind the sheeting; where voids occur outside of the sheeting, they shall be filled immediately with selected fill, thoroughly compacted.

D. The Contractor shall leave in place all sheeting and bracing at the locations and within the limits ordered by the Engineer in writing. The Contractor shall cut off the sheeting at elevations to be determined by the Engineer.
E. Conform to the requirements of the OSHA Standards and Interpretations: “Part 1926 Subpart P-Excavation, Trenching, and Shoring”.

F. The Contractor shall comply with all federal, state, and local safety regulations, and requirements.

PART 2 – PRODUCTS

2.1 BACKFILL MATERIALS

A. Common Fill: Common fill shall be soil containing no stone greater than 2/3 loose lift thickness. The materials shall be free of trash, ice, snow, tree stumps, roots and other organic and deleterious materials. Common fill shall not contain more than 35 percent by weight of silt and clay. It shall be of such a nature and character that it can be compacted to the specified densities in a reasonable length of time. Topsoil and subsoil shall not be considered common fill.

B. Sand and Gravel: Sand and gravel fill shall consist of hard, durable sand and gravel, and shall be free from ice and snow, roots, sod, rubbish, and other deleterious or organic matter. It shall conform to the following gradation requirements.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Finer by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>100</td>
</tr>
<tr>
<td>1/2-inch</td>
<td>50-85</td>
</tr>
<tr>
<td>No. 4</td>
<td>40-75</td>
</tr>
<tr>
<td>No. 10</td>
<td>---</td>
</tr>
<tr>
<td>No. 40</td>
<td>10-35</td>
</tr>
<tr>
<td>No. 100</td>
<td>(b)</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-8</td>
</tr>
</tbody>
</table>

Notes:
(a) Maximum grain size shall be four (4)-inches where placed as base below slab and pavement; elsewhere 2/3 of the loose lift thickness.
(b) The amount passing the No. 100 sieve should be between 40 percent and 70 percent of the amount passing the No. 40 sieve.

C. Crushed Stone: Crushed stone shall consist of durable crushed rock or durable crushed gravel stone, free from ice and snow, sand, clay, loam, or other deleterious or organic material. The crushed stone shall be uniformly blended and shall conform to the following requirements.
<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>3/4-inch Stone*</th>
<th>1/2-inch Stone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-inch</td>
<td>75-100</td>
<td>---</td>
</tr>
<tr>
<td>3/4-inch</td>
<td>0-5</td>
<td>---</td>
</tr>
<tr>
<td>5/8-inch</td>
<td>---</td>
<td>100</td>
</tr>
<tr>
<td>1/2-inch</td>
<td>---</td>
<td>85-100</td>
</tr>
<tr>
<td>3/8-inch</td>
<td>---</td>
<td>15-45</td>
</tr>
<tr>
<td>No. 4</td>
<td>---</td>
<td>0-15</td>
</tr>
<tr>
<td>No. 8</td>
<td>---</td>
<td>0-5</td>
</tr>
</tbody>
</table>

*Stone shall be washed

D. Stone riprap used where indicated shall conform to the following gradation:

<table>
<thead>
<tr>
<th>Size of Stone (in)</th>
<th>Maximum Percent of Total Weight Smaller than Given Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>95-100</td>
</tr>
<tr>
<td>4</td>
<td>0-25</td>
</tr>
<tr>
<td>2 1/2</td>
<td>0-5</td>
</tr>
</tbody>
</table>

E. Processed Gravel for Subbase: Processed gravel for subbase shall be used where specified and shall consist of inert material that is hard, durable stone and coarse sand free from frost, frozen lumps, loam and clay, surface coatings, and deleterious materials.

Gradation requirements for Processed gravel for subbase shall be as designated by MHD M1.03.1 and shall conform to the following:

<table>
<thead>
<tr>
<th>Sieve Designation</th>
<th>Nominal Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 inch</td>
<td>100</td>
</tr>
<tr>
<td>1 ½”</td>
<td>70-100</td>
</tr>
<tr>
<td>¼”</td>
<td>50-85</td>
</tr>
<tr>
<td>No. 4</td>
<td>30-60</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-10</td>
</tr>
</tbody>
</table>

F. Controlled Density Fill (CDF): Controlled density fill shall consist of a flowable, self-consolidating, rigid setting, low density mixture meeting performance standards as specified
in current Massachusetts Highway Department Standard Specifications for Highway and Bridges, Type 2E. CDF is to be batched at a ready mix plant and is to be used at a high or very high slump of approximately 10 to 12 inches. It shall be flowable, require no vibration and after it has been placed can be excavatable by hand tool and/or small machines. The ingredients shall comply with the following:

Portland Cement – AASHTO M 85  
Fly Ash – AASHTO M 295 Class F  
Sand – M4.02.02 (Massachusetts Highway Specification)

2.2 DUST CONTROL

A. Water application shall be the only mean for dust control.

PART 3 – EXECUTION

3.1 FILLING AND BACKFILLING

A. Subgrade Preparation: After the subgrade has been shaped to line, grade, and cross-section, it shall be thoroughly compacted. This operation shall include any required reshaping and wetting to obtain proper compaction. All soft or otherwise unsuitable material shall be removed and replaced with suitable material from excavation or borrow. The resulting area, and all other low sections, holes, or depressions shall be brought to the required grade with accepted material and the entire subgrade shaped to line, grade and cross-section and thoroughly compacted.

B. Backfill Material Selection: Unless otherwise specified or directed, material used for filling and backfilling shall meet the requirements specified under Materials (Part 2). In general, the material used for backfilling utility trench excavations shall be material removed from the excavations provided that the reuse of these materials result in the required trench compaction and meets the requirements specified for common fill. All backfill placed within the building limits shall be structural fill unless otherwise specified. In areas where the bottom of the excavation is in fine sand and silt, and is below the groundwater table, the first lift of backfill shall be 12-inches of compacted sand and gravel to provide a working mat and drainage layer.

Place backfill to a maximum loose lift thickness of 12 inches. Maintain backfill material with a uniform moisture content, with no visible wet or dry streaking, between plus 2 percent and minus 3 percent of optimum moisture content. The final filled soil mass shall be as uniform as possible in lift thickness, moisture content, and effort required to compact soil.

C. Trench Backfill:

1. The trenches shall be backfilled as soon as practicable with suitable material. All trench backfilling shall be done with special care, in the following manner and as directed by the Engineer.

2. Backfill material for pipe bedding shall be deposited in the trench, uniformly on both sides of the pipe, for the entire width of the trench to the springline of the pipe. The
selected backfill material shall be placed by hand shovels, in layers not more than 4-inch-thick in loose depth, and each layer shall be thoroughly and evenly compacted by tamping on each side of the pipe to provide uniform support around the pipe, free from voids.

3. The balance of backfill shall be spread in layers not exceeding 12-inches in loose depth. Each layer shall be thoroughly compacted by mechanical methods and shall contain no rock, stones or boulders larger than 4-inches in their greatest dimension.

4. All trench backfilling shall be done with special care and must be carefully placed so as not to disturb the work at any time; if necessary, a timber grillage or other suitable method shall be used to break the fall of material. The moisture content of the backfill material shall be such that proper compaction will be obtained. Puddling of backfill with water will not be permitted. Backfill within areas to receive topsoil or pavement construction shall be made to grades required to establish the proper subgrade for the placement of topsoil or pavement base courses.

5. In backfilling trenches, each layer of backfill material shall be moisturized and compacted to a density at least equal to that of the surrounding undisturbed earth, and in such a manner as to permit the rolling and compaction of the filled trench or excavation with the adjoining earth to provide the required bearing value, so that paving of the excavated and disturbed areas, where required, can proceed immediately after backfilling is completed.

6. Any trenches or excavations improperly backfilled or where settlement occurs shall be reopened, to the depth required for proper compaction, then refilled and compacted with the surface restored to the required grade and condition, at no additional cost to Owner.

7. During filling and backfilling operations, pipelines will be checked by the Engineer to determine whether any displacement of the pipe has occurred. If the observation of the pipelines shows poor alignment, displaced pipe or any other defects they shall be remedied in a manner satisfactory to the Engineer at no additional cost to the Owner.

D. Backfilling Against Structures:

1. Backfilling against masonry or concrete shall not be done until permitted by the Engineer. The Contractor shall not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking or other damage. As soon as practicable after the structures are structurally adequate and other necessary work has been satisfactorily completed, special leakage tests of the structures shall be made by the Contractor, as required by the Engineer. After the satisfactory completion of leakage tests and the satisfactory completion of any other required work in connection with the structures, the backfilling around the structures shall proceed using suitable and approved excavation material. The best of the backfill material shall be used for backfilling within 2 feet of the structure. Just prior to placing backfill, the areas shall be cleaned of all excess construction material and debris and the bottom of excavations shall be in a thoroughly compacted condition.
2. Symmetrical backfill loading shall be maintained. Special care shall be taken to prevent any wedging action or eccentric loading upon or against the structures. During backfilling operations, care shall be exercised that the equipment used will not overload the structures in passing over and compacting these fills. Except as otherwise specified or directed, backfill shall be placed in layers not more than 12-inches in loose depth and each layer of backfill shall be compacted thoroughly and evenly using approved types of mechanical equipment. Each pass of the equipment shall cover the entire lift area.

3. In compacting and other operations, the Contractor shall conduct his operations in a manner to prevent damage to structures due to passage of heavy equipment over, or adjacent to, structures, and any damage thereto shall be made good by the Contractor at no additional expense to the Owner.

E. After backfilling trenches and excavations, the Contractor shall maintain the surfaces of backfill areas in good condition so as to present a smooth surface at all times level with adjacent surfaces. Any subsequent settling over backfilled areas shall be repaired by the Contractor immediately, in a manner satisfactory to the Engineer, and such maintenance shall be provided by the Contractor for the life of this Contract, at no additional cost to the Owner.

F. The finished subgrade of the fills and filled excavations upon which topsoil is to be placed, or pavements are to be constructed, shall not be disturbed by traffic of other operations and shall be maintained in a satisfactory condition until the finished surfaces are placed. The storage or stockpiling of materials on finished subgrade will not be permitted.

G. Uniformly smooth grading of all areas to be graded, as indicated and as directed, including excavated and filled sections, embankments and adjacent transition areas, and all areas disturbed as a result of the Contractor's operations, shall be accomplished. The finished surfaces shall be reasonably smooth, compacted and free from surface irregularities.

3.2 COMPACTION

A. Compaction Requirements: The degree of compaction is expressed as a percentage of the maximum dry density at optimum moisture content as determined by ASTM Test D1557, Method C. The compaction requirements are as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>ASTM Density Degree of Compaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Against concrete structures</td>
<td>95%</td>
</tr>
<tr>
<td>Pavement base course</td>
<td>95%</td>
</tr>
<tr>
<td>Pavement subbase</td>
<td>95%</td>
</tr>
<tr>
<td>General fill below pavement subbase</td>
<td>95%</td>
</tr>
<tr>
<td>Trench backfill - below pavements</td>
<td>95%</td>
</tr>
<tr>
<td>- below landscaped areas</td>
<td>90%</td>
</tr>
<tr>
<td>Other areas</td>
<td>90%</td>
</tr>
</tbody>
</table>
B. Moisture Control:

1. Fill that is too wet for proper compaction shall be disced, harrowed, or otherwise dried to a proper moisture content to allow compaction to the required density. If fill cannot be dried within 24 hours of placement, it shall be removed and replaced with drier fill.

2. Fill that is too dry for proper compaction shall receive water uniformly applied over the surface of the loose layer. Sufficient water shall be added to allow compaction to the required density.

C. Unfavorable Conditions:

1. In no case shall fill be placed over material that is frozen. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, fill operations shall not be resumed until the moisture content and the density of the previously placed fill are as specified.

2. In freezing weather, a layer of fill shall not be left in an uncompacted state at the close of the day's operations. Prior to terminating work for the day, the final layer of compacted fill shall be rolled with a smooth wheeled roller to eliminate ridges of soil left by compaction equipment.

D. Compaction Control:

1. In-place density tests shall be made in accordance with ASTM D1556, D2922 or D2167 as the work progresses, to determine the degree of compaction being attained by the Contractor. Any corrective work required as a result of such tests, such as additional compaction, or a decrease in the thickness of layers, shall be performed by the Contractor at no additional expense to the Owner. In-place density tests will be made at the Contractor's expense by the geotechnical testing laboratory.

2. The Engineer's duties do not include supervision or direction of the actual work by the Contractor, his employees or agents. Neither the presence of the Engineer nor any observation and testing performed by him shall excuse the Contractor from defects discovered in his work at that time or subsequent to the testing.

3. In-place density tests shall be performed as a minimum according to the following:

   a. One test per lift under spread footings.
   b. One test per lift for every 100' length of strip footings.
   c. A minimum of every 50 cubic yards of backfill in trenches or around structures.
   d. One test every 500 cubic yards of material placed for embankment construction.

4. Minimum testing requirements for granular drainage and cover material placed over the impervious cover material or liner are as follows:
<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Frequency</th>
<th>Testing Method(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grain Size Analysis (to the No. 200 Sieve)</td>
<td>1 test/1500 cy</td>
<td>ASTM D-422</td>
</tr>
<tr>
<td>Proctor Compaction Test</td>
<td>One test/source</td>
<td>ASTM D-1557</td>
</tr>
</tbody>
</table>

E. Placement:

1. All fill shall be placed in horizontal layers. Fill shall not be placed following the natural contours of the ground. Fill shall be placed starting in the lowest areas working up to finish grades in horizontal layers in the manner specified herein. Each layer of fill should be benched into the existing slope in order to avoid the formation of a shear plane.

3.3 FINE GRADING

A. Before surface or subbase is spread, the subgrade shall be shaped to a true surface conforming to the Drawings. All depressions and high spots shall be filled with suitable material or removed and such areas again compacted until the surface is smooth and properly compacted. A tolerance of 1/2-inch above or below the finished subgrade will be allowed provided that this 1/2-inch above or below grade is not maintained for a distance longer than 50 feet and that the required crown is maintained in the subgrade. Any portion which is not accessible to a roller shall be thoroughly compacted by other mechanical methods.

3.4 STOCKPILING AND USE OF SURPLUS EXCAVATED MATERIALS

A. The Contractor shall strip and stockpile excavated materials. Any bushes that are removed shall be protected and replanted in the same location. Removed curbing shall be stockpiled in a safe manner. Where grassed areas are disturbed by stockpiled materials, the Contractor shall rake out the area and loam and re-seed at his expense.

B. Stockpiling of materials shall be included in the pay items for excavating and no allowances shall be made for any stripping and stockpiling requirements.

C. Should conditions make it impracticable or unsafe to stack material adjacent to the trench, the material shall be hauled and stored at a location provided by the Contractor. When required, it shall be re-handled and used in backfilling the trench.

D. Use of surplus excavated materials as back-fill material is permitted if surplus material meets requirements of backfill materials as specified above. All other surplus material shall be taken off-site and disposed of legally at the Contractor’s expense.

E. Testing of surplus excavated materials shall be provided as described in 1.2B to confirm compliance with specifications. Submit test results to Engineer one week prior to backfill operations.
3.5 EXCAVATION SUPPORT SYSTEM

A. Furnish, put in place and maintain sheeting and bracing required by Federal, State or local safety requirements to support the sides of the excavation and prevent loss of ground which could endanger personnel, damage or delay the work or endanger adjacent structures. If the Engineer is of the opinion that at any point sufficient or proper supports have not been provided, he/she may order additional supports placed at the expense of the Contractor. Compliance with such order shall not relieve the Contractor from his/her responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and rammed.

B. When moveable trench bracing such as trench boxes, manhole boxes, moveable sheeting, shoring or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding and the screened gravel backfill.

C. When installing pipe; trench boxes, moveable sheeting, shoring or plates shall not be allowed to extend below mid-diameter of the pipe. As trench boxes, moveable sheeting, shoring or plates are moved, screened gravel shall be placed to fill any voids created and the screened gravel and backfill shall be recompacted to provide uniform side support for the pipe.

D. The Contractor will be permitted to use steel sheeting in lieu of wood sheeting for the entire job wherever the use of sheeting is necessary. The cost for use of sheeting will be included in the bid items for pipe and shall include full compensation for driving, bracing and later removal of sheeting.

E. All sheeting and bracing shall be carefully removed in such manner as not to endanger the construction of other structures, utilities, or property, whether public or private. All voids left after withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted to that purpose, by watering or otherwise as directed.

F. The Contractor shall receive no payment, for sheeting, bracing, etc., during the progress of the work. The Contractor shall receive no payment for sheeting which has actually been left in the trench for the convenience of the Contractor.

G. Sheetin driven below mid-diameter of any pipe shall remain in place from the driven elevation to at least 1-ft above the top of the pipe.

3.6 DUST CONTROL

A. Calcium chloride application will not be permitted unless it is approved by the Engineer

B. Water application shall be the only method used for dust control. Application shall be by means of a water truck or other approved method. The number and frequency of applications shall be determined by the Engineer.

END OF SECTION 02200
SECTION 02431

CATCHBASINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Constructing catchbasins as indicated, specified, and consisting of:
   a. Bases: Cast-in-Place concrete, one piece, precast concrete sumps or precast segmental plates, as indicated.
   b. Walls: Precast Concrete Masonry Units.
   a. Top of Cone: Brickwork for adjusting frame to meet finished surface (not to exceed 6 in.).
   b. Frames and Grates: As indicated and specified.

B. Related sections include the following:

1. Section 02210 - Earth Excavation, Backfill, Fill and Grading
2. Section 03300 - Cast-in-Place Concrete

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C150, Type II

B. Hydrated Lime: ASTM C207, Type S

C. Sand: ASTM C33, Fine Aggregate, except all passes No. 8 sieve.
D. Water: Potable

E. Brick: ASTM C32, Grade SS, except that the mean of five tests for absorption shall not exceed eight percent by weight.

F. Frames and Grates: Cast Iron, minimum Class 25 conforming to ASTM A48, and as follows:
   1. Castings to be free from scale, lumps, blisters, sandholes.
   3. Thoroughly clean and hammer inspect.
   4. Capable of withstanding AASHTO H-20 loading unless otherwise indicated or specified.

2.2 PRECAST CONCRETE MASONRY UNITS

A. Precast machine-made solid segments: ASTM C139, and following requirements:
   1. Use Type II cement except as otherwise permitted.
   2. Width of units as indicated.
   3. Inside and outside surfaces of units curved to necessary radius; interior surfaces of structures cylindrical, except top batter courses to reduce inside section of structure uniformly to required size and shape at top.
   4. Only full-length units required to lay any one course.
   5. Accept units on basis of material tests and inspection of completed product.

2.3 PRECAST CONCRETE SUMPS

A. Precast concrete sumps: ASTM C478, and following requirements:
   1. Wall section not less than 6 in. thick.
   2. Use Type II cement except as otherwise permitted.
   3. Cured by saturated steam at temperature between 100 and 130 deg. F. for period of not less than 12 hours or, when necessary, for such
additional time as needed to enable sections to meet strength requirements.

4. Allow no more than two lift holes cast or drilled in each sump.

5. Accept sumps on basis of material tests and inspection of completed product.

2.4 MIXES

A. Concrete: Section 03300.

B. Mortar for Brickwork: Mix portland cement, hydrated lime and sand. Volume of sand not to exceed three times sum of volumes of cement and lime. Proportion cement and lime as directed; may vary from 1:1/4 for dense, hard burned brick to 1:3/4 for softer brick. Generally mix mortar in proportion of 1:1/2 : 4-1/2. Use sufficient water to form a workable mixture.

C. Mortar for Masonry Units: Mix one part portland cement and two parts of sand by volume with sufficient water to form a workable mixture.

D. Mortar for Plugging Lift Holes: Mix portland cement and sand 1:1/2, with sufficient water to make mortar damp, just short of "balling".

PART 3 - EXECUTION

3.1 LAYING BRICKWORK AND MASONRY UNITS

A. Use clean units.

B. Moisten bricks by suitable means, until neither dry as to absorb water from mortar nor wet as to be slippery when laid.

C. Do not moisten concrete masonry units.

D. Lay each brick in full bed and joint of mortar without requiring subsequent grouting, flushing or filling; bond thoroughly.

E. Lay each masonry unit in full bed of mortar; bond thoroughly. Fill vertical keyways, completely, with mortar.

3.2 PLASTERING AND CURING BRICK MASONRY

A. Plaster outside faces with mortar 1/4-in. to 3/8-in thick.
B. Moisten brick masonry before application of mortar, if required.

c. Spread and trowel plaster carefully.

D. Check for bond and soundness after hardening, by tapping.

E. Remove and replace unbonded and unsound plaster.

F. Protect from too rapid drying by use of moist burlap or other approved means.

G. Protect from weather and frost.

3.3 SETTING GRATES AND FRAMES

A. Set inlets and frames with tops conforming accurately to finished ground or pavement surface as indicated and directed.

B. Set circular frames concentric with top of masonry.

C. Set frames in full bed of mortar to fill and make watertight completely the space between top of masonry and bottom flange of the frame.

D. Place a thick ring of mortar extending to the outer edge of masonry, around bottom flange. Finish mortar smoothly and give a slight slope to shed water away from the frame.

E. Place grates in the frames on completion of other work at the catchbasin.

3.5 ADJUSTMENT TO GRADE OF EXISTING CATCHBASIN

A. Adjust existing catchbasin tops to line and grade as indicated on drawings or as directed by Engineer.

B. Use only new brick for adjustment.

3.6 ABANDONMENT OF EXISTING CATCHBASIN

A. Remove entire top of structure, including all tapered or domed portions of walls. Securely plug with Class B concrete, pipes or conduits in remaining portions of structure then fill with acceptable material thoroughly compacted by tamping, as specified for backfill under Section 02210.

B. Salvage and clean cast-iron frames, covers, and traps removed from abandoned catchbasins. Deliver salvaged castings to Owner. Castings remain property of Owner.
3.8 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02431
SECTION 02480

LANDSCAPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Providing loam, fertilizer, seed and related work as indicated and specified.

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:

1. Submit with seed, certificates concerning seed mixture, purity, germinating value, and crop year identification.

2. Submit test samples of loam to a certified soils consultant to determine fertilizer and lime requirements and return two copies of results for implementation.

3. If hydroseeding is to be used, provide written description containing seed analysis, fertilizer, and lime addition data.

1.4 QUALITY ASSURANCE

A. Provide in accordance with Section 01400 and as specified.

B. Ability to Deliver:

1. Investigate sources of supply and make assurances that plants will be supplied as indicated in Schedule of Plant Material in sizes, variety and quality noted and specified before submitting bid.
2. Failure to take this precaution will not relieve responsibility for furnishing and installing plant material in accordance with Contract requirements and without additional expense to OWNER.

C. General:

1. Furnish suitable quantities of water, hose and appurtenances.

2. Use loam, having prior vegetative growth that did not contain toxic amounts of either acid or alkaline elements.

3. Begin maintenance immediately after each portion of lawn is seeded and continue for minimum of 45 days.

4. Repair or replace seeded areas, plants, shrubs, and trees which, in judgment of Engineer, have been damaged or have not survived and grown in a satisfactory manner, for a period of one year after acceptance.

5. Provide as specified seedings or plantings replacements of the same type and size as specified.

6. Dry loam test samples to constant weight at temperature of 230 deg. F, plus or minus 9 degrees.

7. The Engineer reserves the right to test and reject any material not meeting specifications by utilizing tests in accordance with methods adopted by the Association of Official Agricultural Chemists. Costs for these tests shall be paid by the Contractor.

1.5 JOB CONDITIONS

A. It is the intent of this specification that existing trees within grading and seeding limits, not disturbed by building operations, be saved and protected, except where specified to be removed. Clear trees required to be removed only after approval by Engineer. Engineer directs variations required in grading on the job.

B. Planting Seasons:

1. Recommended Spring Planting Season: From time soil can be satisfactorily worked until following dates at end of planting season:

   a. Lawns - April 15.

   b. Trees and Shrubs - May 15.
c. Evergreens - May 1.

2. Recommended Fall Planting Season: Commence and terminate at time listed below:
   a. Lawns - August 1 to October 1.
   b. Trees and Shrubs - From dormancy to November 30.
   c. Evergreens - August 20 to September 30.

C. Perform actual planting only when weather and soil conditions are suitable in accordance with locally accepted practice.

D. Protection:
   1. Protect seeded and planted areas against damage by trespass and other causes.
   2. Protect work until accepted.
   3. Replace, repair, restake, or replant as directed by Engineer, and at own expense, seeding or planting which is damaged.
   4. If planting is done after lawn preparation, protect lawn areas, repair damage resulting from planting operations.

E. Wherever landscape work must be executed in conjunction with construction of other work, arrange a schedule of procedure that will permit execution of landscape work as specified.

1.6 WARRANTY

A. Provide in accordance with Section 01740 and as specified.

B. Guarantee new plant material through one full growing season after plants are installed.
   1. Repair damage to plants or lawns during plant replacement.
   2. Guarantee plants replaced under this for one full growing season from date of replacement.

C. Guarantee lawn areas for duration of one full year after seeding to be alive and in satisfactory growth at end of guarantee period.
1. For purpose of establishing an acceptable standard, scattered bare spots, none of which is larger than 1 sq. ft. will be allowed up to a maximum of 3% of lawn area.

PART 2 - PRODUCTS

2.1 PLANT REPAIR

A. For repair work, provide plants in accordance with ANSI Standard for Nursery Stock, Designation Z60.1-1973.

B. Plant Material: Vigorous, healthy, well-formed upper growth and dense, fibrous and large root system, and free of insect or mechanical damage. Grown under climatic conditions similar to those in project locality.

C. Plants, except those specified as container grown, balled in burlap with root ball formed of firm earth from original and undisturbed soil.

1. Ball width, depth and lacing as specified in SCHEDULE OF PLANT MATERIAL. Do not accept balled and burlapped plants with broken or loose balls, or of "manufactured" earth or peat humus.

2.2 BONE MEAL

A. Commercial raw bone meal, finely ground and containing a minimum of 1 percent nitrogen and 18 percent phosphoric acid.

2.3 STAKES

A. Wood stakes, minimum of 2-in. by 2-in. square and 8 feet in length, of uniform size, straight, reasonably free from knots, treated with wood preservative and painted green.

2.4 WIRE

A. Two strands No. 14-gage galvanized soft ferrous wire, twisted, for tree guying.

2.5 HOSE COLLAR

A. Good quality reinforced rubber hose of minimum 1/2-in. inside diameter and green in color, for protecting tree bark from supporting wires.
2.6 TREE WRAP

A. Quality, heavy, waterproof crepe paper manufactured for this purpose. Width of material not less than 6 inches, and wrapped from bottom with minimum 2 in. overlap.

2.7 ANTIDESICCANT

A. Acceptable antidesiccant emulsion which provides a film over plant surfaces permeable enough to permit transpiration.

B. Applied to evergreen trees, shrubs and all deciduous plant material. Application made prior to transport-ation from nursery if deciduous trees are leafed out at time of digging. The rate and method of application shall be in accordance with the manufacturer's recommendations.

2.8 MULCH

A. Shredded pine bark free of wood chips, stones, branches or other deleterious material. Bark shredded in strips not larger than 3 inches in any dimension and aged for period of not less than six months after removal from original logs.

2.9 MAT

A. 1/4-in. to 1/2-in. thick mat consisting of lime or silicate glass fibers with average fiber diameter to 9 microns and 2-in. to 4-in. strands of fiber bonded with phenol formaldehyde resin, 100 percent textile glass fiber, roll type, water permeable with a minimum thickness of 1/4-in., a maximum thickness of 1/2-in. and a density of not less than 3 pounds per cubic foot.

2.10 LOAM

A. Fertile, friable, natural topsoil typical of locality, without admixture of subsoil, refuse or other foreign materials, and obtained from well-drained arable site. Mixture of sand, silt and clay particles in equal proportions. Free of stumps, roots, heavy or stiff clay, stones larger than 1 inch in diameter, lumps, coarse sand, noxious weeds, sticks, brush or other deleterious matter.

B. Not less than 4 percent nor more than 20 percent organic matter as determined by loss on ignition of oven-dried samples.

2.11 LIME, FERTILIZER AND SEED

A. Ground agricultural limestone containing not less than 85 percent of total carbonates.
B. Commercial type, uniform in composition, free flowing, conforming to state and federal laws, and at least 50 percent of nitrogen derived from natural organic sources of ureaform and containing following percentages by weight: Nitrogen 10 percent, Phosphorus 10 percent, Potash 10 percent.

C. Turf grass seed, inside perimeter fence, clean, high in germinating value and latest year’s crop mixture as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Minimum proportion by weight</th>
<th>Percent purity</th>
<th>Percent germination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky bluegrass</td>
<td>20%</td>
<td>87%</td>
<td>85%</td>
</tr>
<tr>
<td>Merio Kentucky bluegrass</td>
<td>20%</td>
<td>87%</td>
<td>85%</td>
</tr>
<tr>
<td>Red Chewings Fescue</td>
<td>45%</td>
<td>98%</td>
<td>85%</td>
</tr>
<tr>
<td>Manhattan Rye</td>
<td>15%</td>
<td>98%</td>
<td>90%</td>
</tr>
</tbody>
</table>

D. Turf grass seed, outside perimeter fence, clean high in germinating value and of the latest year’s crop mixed as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Minimum proportion by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creeping Red Fescue</td>
<td>50%</td>
</tr>
<tr>
<td>Domestic Ryegrass</td>
<td>20%</td>
</tr>
<tr>
<td>Redtop</td>
<td>5%</td>
</tr>
<tr>
<td>Kentucky Bluegrass</td>
<td>25%</td>
</tr>
</tbody>
</table>

E. Weeds shall not exceed 0.25 percent.

2.12 SOD

A. Established, nursery grown Kentucky or Merion Bluegrass sod, vigorous, well rooted, healthy turf, free from disease, insect pests, weeds, other grasses, stones, and any other harmful or deleterious matter.

B. Sod harvested by machine at uniform soil thickness of approximately 1 inch but not less than 3/4 of an inch. Measurement for thickness excludes top growth and thatch. Prevent tearing, breaking, drying or any other damage.

2.13 PEAT MOSS:

A. Shredded, loose, substantially free of mineral and waste matters.

B. Minimum organic matter by weight on a dry basis: 80 percent.
PART 3 - EXECUTION

3.1 PLANTING PITS FOR REPAIR WORK

A. Excavate with vertical sides and in accordance with following requirements:

1. Excavate tree pits to minimum of 2 feet greater in diameter than root ball of tree and sufficiently deep to allow for 1-foot thick layer of planting soil mixture below root ball.

2. Plant shrubs in pits 12 inches greater in width than diameter of root ball or container and minimum of 18 inches deep below finished grade, or as necessary to properly set plant at finished grade.

B. Adjust depth of planting beds and pits to provide minimum of 8 inches of planting soil mixtures under roots of all plants.

C. Set plants in center of pits, plumb and straight and at level that top of root ball is 1 inch lower than surrounding finished grade after settlement.

D. Compact topsoil mixture thoroughly around base of root ball to fill all voids, when plant material is set. Cut all burlap and lacing and remove from top 1/3 of root ball. Do not pull burlap from under any root ball. Backfill tree and shrub pits halfway with planting soil mixture and thoroughly puddle before backfilling tree or shrub pit. Water tree or shrub, again, when each backfill operation is complete.

3.2 PLANTING SOIL MIXTURE

A. Thoroughly mix all loam used in backfilling planting pits, with peat moss at rate of 2 parts loam to 1 part peat moss, to obtain required planting soil mixture.

3.3 BONE MEAL

A. Add bone meal to planting mixture used for backfilling tree and shrub pits in following amounts:
<table>
<thead>
<tr>
<th>Plant Type</th>
<th>Quantity (lb)</th>
<th>Plant Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrubs*</td>
<td>3/5</td>
<td>all</td>
</tr>
<tr>
<td>Minor trees</td>
<td>1</td>
<td>3'-4' hgt.</td>
</tr>
<tr>
<td></td>
<td>1-1/2</td>
<td>4'-5' hgt.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5'-6' hgt.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6'-8' hgt.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>8'-10' hgt.</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>10'-12' hgt.</td>
</tr>
<tr>
<td>Major trees</td>
<td>5</td>
<td>2-1/2&quot; to 3&quot; cal.</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>3&quot;-4-1/2&quot; cal.</td>
</tr>
</tbody>
</table>

* Do not apply bone meal to rhododrons and azaleas.

3.4 PLANTING

A. Thoroughly compact topsoil planting mixture around root balls and water. Immediately after plant pit is backfilled, form a shallow saucer slightly larger than pit with ridge of soil to facilitate and contain watering. After planting, cultivate soil in all shrub beds between shrub pits. Grub out sod or other growth and remove from bed area. Rake bed area smooth and neat and outline. Mulch all tree pits and shrub beds with a minimum of 3 inches of shredded pine bark mulch as indicated on drawings. Do not use admixture of wood chips in mulch.

3.5 SECURING AND PROTECTING

A. Install tree guying and staking as indicated in details.

B. Install hose collars for protecting tree bark.

3.6 PRUNING

A. Prune each tree and shrub in accordance with American Association of Nurserymen standards to preserve natural form and character of plant.

B. Remove all dead wood, suckers and broken or badly bruised branches. In addition, remove 1/4 to 1/3 of remaining wood. Do all pruning with clean, sharp tools by workmen thoroughly familiar with this type of work. Paint cuts in excess of 1 inch in diameter with acceptable tree paint. Cover all exposed cambium, as well as other exposed living tissue, with paint. Do not remove leaders.

C. Apply antidesiccant to all evergreen trees and shrubs and to all deciduous plant materials which are leafed out at time of planting. Follow manufacturer's recommendations regarding rate and method of application.
3.7 BARK MULCH SURFACES

A. Mulch, with shredded pine bark, all tree pits, shrub pits and beds, and all areas planted with ground cover, immediately after planting operations are completed.

1. For tree and shrub pits and beds, provide a minimum 3 in. of mulch.

2. For ground cover beds, provide a minimum 2 in. of mulch.

B. Limit mulching for trees and individual shrubs to pit area inside of saucer and for shrub, tree and ground cover beds and panels planted with multiple trees. Define limits of beds in turf areas or where no building wall or curb exists by installed metal edging as indicated.

3.8 LOAM

A. Spread loam on areas to be seeded, to required 6-in. depth, fine grade and compact.

3.9 LIME, FERTILIZER AND SEEDING

A. Apply lime by mechanical means at rate of 50 pounds per 1,000 sq. ft.

B. Apply fertilizer at rate of 50 pounds per 1,000 sq. ft.

C. Remove weeds or replace loam and reestablish finish grades, if any delays in seeding lawn areas and weeds grow on surface or loam is washed out prior to sowing seed and without additional compensation. Sow seed at rate of 4 pounds per 1,000 sq. ft. on calm day, by mechanical means. Sow one-half of seed in one direction, and other half at right angles to original direction. Rake seed lightly into loam, to depth of not more than 1/4 inch and compact by means of an acceptable lawn roller weighing 100 to 150 pounds per linear foot of width.

D. Water lawn areas adequately at time of sowing and daily thereafter with fine spray, and continue throughout maintenance and protection period.

E. Loam, lime, fertilize and seed required areas outside of perimeter same as lawn areas. Apply seed at rate of 80 pounds per acre. Rake seed lightly, after sowing, into top 1/4 in. of loam, and compact by suitable rollers weighing 100 to 150 pounds per linear foot of width.

3.10 SOD
A. Install sod not more than 48 hours after cutting. Provide lime, fertilizer, etc.,
preparation for sod same as stated above for seed.

3.11 CLEAN-UP

A. Remove soil or similar material which has been brought onto paved areas,
keeping these areas clean.

B. Upon completion of planting, remove excess soil, stones and debris which
has not previously been cleaned up and legally dispose of off-site.

C. Prepare lawns and planting areas for final inspection.

D. Protect slopes and embankments against erosion until work is accepted.
Repair eroded portions of seeded or sodded areas by refilling, resodding,
remulching and reseeding as required by condition and to satisfaction of
Engineer. Protection may be by installation of sod strips or other methods.

3.12 MAINTENANCE - SEEDED AREAS AND PLANTING

A. Maintain lawn areas and other seed areas at maximum height of 2-1/2 inches
by mowing at least three times. Weed thoroughly once and maintained until
time of final acceptance. Reseed and refertilize with original mixtures,
watering or whatever is necessary to establish over entire area of lawn and
other seeded areas a close stand of grasses specified, and reasonably free of
weeds and undesirable coarse native grasses.

B. Begin maintenance immediately after each planting and continue until final
acceptance of work. Water, mulch, weed, prune, spray, fertilize, cultivate
and otherwise maintain and protect all plants.

C. Reset settled plants to proper grade and position, and restore planting saucers
and remove dead material. Tighten and repair guys. Correct defective work
as soon as possible within guarantee period.

3.13 INSPECTION FOR ACCEPTANCE

A. Upon written request by the Contractor, the Engineer shall inspect all lawn
areas to determine completion of contract work. This request must be
submitted at least 10 days prior to the anticipated date. The lawns will
become acceptable if they show a uniform, thick, well developed stand of
grass that may be occupied by the Owner for their intended use. When
acceptance is made in writing to the Contractor, the Contractor’s
responsibility for maintenance shall terminate.

B. The Contractor shall furnish to the Owner complete written instructions for
maintenance of all lawn areas at time of acceptance.

C. Acceptance of the lawn area shall not occur before acceptance of all work.

3.14 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02480
SECTION 02525

PAVING, SIDEWALKS AND CURBING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Removal and replacement of existing bituminous pavement and subbase.

2. Installation of temporary pavement.

3. Installation of permanent trench and full-width pavement.


5. Raising and adjusting castings and valve boxes.

B. Related sections include the following:

1. Section 02200 - Earthwork

2. Section 03300 - Concrete

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES.

1. Product Data: Submit complete data on materials to be used in construction, including gradation tests for granular base.

2. Design Data: Submit design mix for bituminous base, binder and top course.
1.4 QUALITY ASSURANCE

A. Provide in accordance with Section 01400 and as specified.

B. Laboratory Testing Required:

1. The density of the Bituminous Concrete Pavement will be determined by using either the following tests; Nuclear Density Gauge Method ASTM D2950 or the Bulk Specific Gravity Method AASHTO-T166.

1.5 PROJECT\SITE CONDITIONS\PROJECT DESCRIPTION

A. Environmental Requirements:

1. Do not place materials when underlying surface is muddy, frozen, or has frost, snow, or water thereon.

2. Do not place concrete when air temperature at time of placement, or anticipated temperature for following 24 hours, is lower than 40°F or higher than 90°F.

B. Existing Conditions:

1. Drawings show approximate location of existing structures along pipeline route.

C. In general, the following pavement repairs shall be made:

1. In areas where test pits, tapping sleeve installations, or exploratory excavations occur or where the road is to be reconstructed by others, a 3-inch temporary pavement is to be placed. When, and if, this material is disturbed during additional excavation work required for utility installation it shall be replaced.

2. In road and streets that are to receive full width overlays, a 2-inch permanent base course shall be placed, on a weekly basis, in lieu of temporary pavement. After a 90-day minimum period, or a winter settlement period, a 1-inch, full width permanent wearing course overlay shall be placed.

3. In road and streets that are not scheduled to have full width overlays placed, the trench repairs shall consist of a 2-inch permanent base course pavement placed on a weekly basis. After a 90-day minimum period, or a winter settlement period, a 1-inch permanent pavement wearing course shall be installed.

4. The paving thicknesses specified above may be increased based on
permit or field requirements. Payment for additional thickness shall be made at the unit price bid in the proposal.

1.6 SEQUENCING AND SCHEDULING

A. All roadway excavated areas shall be paved daily with temporary trench pavement as specified. Paving on a weekly basis will be required unless permission not to do so is received from the applicable permit agency. Temporary pavement shall be maintained a minimum of 90 days in local streets.

B. Use of steel plates require the Contractor notify the Quincy Public Works Department prior to use. If approved, steel plates shall be recessed into the roadway and welded as required.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Asphalt:

1. Ensure that asphalt replacement conforms to Class I Bituminous Concrete, Type I-1, MHD - 460.

2. Asphalt mixtures shall be within the composition limits for courses in accordance with MHD M3.11.03, and Table A.

B. Concrete:

1. Use concrete as specified in Section 03300.

C. Gravel

1. Sub-grade material shall be new processed gravel conforming to MHD specification M1.03.1 “Processed Gravel for Sub-Base”.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection:

1. Existing Roadway:

a. Saw cut existing pavement to required width and depth to avoid
damage to adjacent pavement, curbs, gutters, or other structures and as indicated on the drawings.

b. Roadways which require full depth pavement reclamation and contain existing granite curbing shall have full depth reclamation end 24 inches away from the curbing. Limited depth excavation shall occur within 24 inches of the curbing to ensure the granite curb remains in place.

B. Surface Preparation:

1. Pavement Subbase:
   a. The subbase to be placed under pavement shall be a minimum of 12-inches thick after compaction. Subbase shall be evenly spread and thoroughly compacted in accordance with the Contract Documents.
   b. The subbase shall be spread in layers not more than 8 - inches thick except the last layer of gravel shall be 4-inches thick, compacted measure. All layers shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by ASTM D1557 Method C at optimum moisture content.
   c. Complete subbase preparation, including dynamic compaction, for full width before placing surfacing materials.

2. Subgrade:
   a. Prepare subgrade in accordance with Section 02200.
   b. Complete subgrade preparation, including dynamic compaction, for full width before placing surface materials.
   c. Stabilize subgrades in accordance with Section 02200 so that loaded construction vehicles do not cause rutting or displacement when depositing materials.

3. Raising and Adjusting Castings:
   a. Prior to top course paving, all existing municipally owned catch basin and manhole castings and curb and valve boxes shall be raised, if necessary, to the proper grade by the Contractor. The Contractor shall replace all gate valve boxes which are adjusted with boxes meeting the municipality standards unless the City agrees that the salvaged box is acceptable for reuse.
b. Castings owned by private utilities shall be raised by the responsible utility. The Contractor shall be responsible for coordinating this work.

c. The method of adjusting these castings shall be as follows: Cut around catch basin or manhole castings a minimum of 8 inches from casting. Excavate and if required rebuild up to 12 inches of masonry below the bottom of the casting. Backfill with suitable material and compact to bottom of casting. Place high, early strength cement or bituminous concrete collar, as directed by the Authority, to approximately 1½ inches below the raised casting grade. Cast-in-place concrete work shall conform to Section 03300.

d. The method of raising valve boxes shall be as follows: Cut around valve box a minimum of 8 inches from valve box. Excavate as required and raise the valve box. Pour high early strength cement or bituminous concrete collar, as directed, to approximately 1½ inches below the top of the valve box.

e. Castings which need to be raised or adjusted to complete final top course full-width paving shall be done immediately prior to paving.

3.2 PAVEMENT MILLING

A. Equipment

1. The equipment for milling the pavement surface shall be designed and built for milling flexible pavements and shall have a minimum 6 foot cutting width. It shall be self-propelled with sufficient power, traction, and stability to maintain depth and slope and shall be capable of removing the existing bituminous concrete pavement to the line, grade, and typical cross-section shown on the plans.

2. The milling machine shall be equipped with a built in automatic grade control system that can control the longitudinal profile and the transverse cross-slope to produce the specified results. The longitudinal controls shall be capable of operating from any longitudinal grade reference, including string line, ski (30 feet minimum), mobile string line (30 foot minimum), or matching shoe. The transverse controls shall have an automatic system for controlling cross-slope at a given rate.

3. The machine shall be capable of operating at a minimum speed of 10 feet per minute and be able to provide a 0 to 3 inch deep cut (minimum) in one pass. It shall be designed so that the operator can at
all times observe the milling operation without leaving the control area of the machine. The teeth on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture.

4. The machine shall be equipped with an integral pickup and conveying device to immediately remove material being milled from the surface of the roadway and discharge the millings into a truck, all in one operation. The machine shall also be equipped with a means of effectively limiting the amount of dust escaping from the milling and removal operation in accordance with local, State, and Federal air pollution control laws and regulations.

5. When milling smaller areas or areas where it is impractical to use the above described equipment, the use of a smaller or lesser equipped milling machine may be permitted when approved by the Engineer.

6. A sweeper equipped with a water tank, spray assembly to control dust, a pick-up broom, a dual gutter broom, and a dirt hopper shall be provided by the Contractor. The sweeper shall be capable of removing millings and loose debris from the textured pavement. Other sweeping equipment may be provided in lieu of the sweeper when approved by the Engineer.

B. Milling Construction Methods

1. The milled surface shall provide a satisfactory riding surface with a uniform textured appearance. The milled surface shall be free from gouges, excessive longitudinal grooves and ridges, oil film, and other imperfections that are a result of defective equipment, improper use of equipment, or poor workmanship. Any unsatisfactory surfaces produced are the responsibility of the Contractor and shall be corrected at the Contractor’s expense and to the satisfaction of the Engineer.

2. Unless otherwise specified, milling shall be done to improve rideability and/or cross-slope. The existing pavement shall be removed to the average depth shown on the plans, in a manner that will restore the pavement surface to a uniform cross-section and longitudinal profile. The longitudinal profile of the milled surface shall be established by a stringline, mobile stringline, or mobile ski. The cross-slope of the milled surface shall be established by a second sensing device or by an automatic cross-slope control mechanism. The Contractor will be responsible for providing all grades necessary to remove the material to the proper line, grade, and typical cross-section shown on the plans. The Engineer may waive the requirement for automatic grade or slope controls where the situation warrants such action.
3. Protection shall be provided around existing catch basin inlets, manholes, utility valve boxes, and any similar structures. Any damage to such structures as a result of the milling operation is the Contractor’s responsibility and shall be repaired at the Contractor’s expense.

4. To prevent the infiltration of milled material into the storm sewer system the Contractor shall take special care to prevent the milled material from falling into the inlet openings or inlet grates. Any milled material that has fallen into inlet openings or inlet grates shall be removed at the Contractor’s expense.

5. At all permanent limits of milling, a clean vertical face shall be established prior to paving. No vertical faces, transverse or longitudinal, shall be left exposed to traffic. If any vertical face is formed in an area exposed to traffic a temporary paved transition shall be established. If a vertical face is not formed and the milling machine is used to temporarily transition the milled pavement surface to the existing pavement surface, the length of the temporary transition shall conform to the below requirements.

6. Transitions for Roadway Surface: Transitions shall be formed at any point on the roadway where the pavement surface deviates, vertically, from the uniform longitudinal profile as specified on the plans. Whether formed by milling or by bituminous concrete mixture, all transition lengths shall conform to the criteria below unless otherwise specified.

7. Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a sweeper or other approved equipment to remove, to the greatest extent practicable, material which will become airborne under traffic. This operation shall be conducted in a manner so as to minimize the potential for creation of a traffic hazard and to comply with local, State, and Federal air pollution control laws and regulations. Any damage done to traffic as a result of milled material becoming airborne is the responsibility of the Contractor and shall be repaired at the Contractor’s expense.

8. The milled surface will be tested with a 10 foot straightedge furnished by the Contractor. The variation of the top of ridges from the testing edge of the straightedge, between any two ridge contact points. The variation of the top of any ridge from the bottom of the groove adjacent to that ridge shall not exceed one quarter (¼) of an inch in ten (10) feet in any direction in preparation for placing a final wearing surface, or three eighths (3/8) of an inch for an intermediate course. Any point in the surface not meeting these requirements shall be corrected as directed by the Engineer at the Contractor’s expense.
9. The Contractor may be waived of the straightedge surface requirements stated in the preceding paragraph in areas where a surface lamination between bituminous concrete layers or a surface lamination of bituminous concrete on Portland cement concrete causes a non-uniform texture to occur. This is subject to the approval of the Engineer.

10. The length of the milled tapered “keyway” transition shall conform to the requirements above.

3.3 NEW PAVEMENT INSTALLATION

A. General

1. Pavement depths shall be as shown on the drawings or as specified herein.

B. Temporary Bituminous Pavement:

1. Where specified and after placement of the subbase, the Contractor shall place temporary pavement above the trench, between the edges of the existing pavement.

2. The temporary pavement shall be repaired as necessary to maintain the surface of the pavement until replaced by permanent pavement.

C. Permanent Bituminous Pavement:

1. Repair asphalt roads, shoulders, and private driveways or streets, cut by line of trench or otherwise damaged during construction operations.

2. Compact and finish pavement replacement to provide a smooth transition between new and existing surfaces.

3. Where new pavement abuts existing pavement outside the limits of work, saw cut existing pavement full depth for a smooth, regular edge so that new pavement in-fill or new adjoining areas create a neat, straight seam with no feathering.

4. The bituminous paving mixture, equipment, methods of mixing and placing, and the precautions to be observed as to weather, condition of base, etc., shall be in accordance with MHD 460.

5. All paving thicknesses are measured after rolling. Permanent surface courses shall be evenly spread and rolled with a power roller having a minimum weight of 5 tons.

6. Binder and Top Course Pavement:
a. Immediately prior to installing the binder course, the trimmed edges shall be made stable and unyielding, free of loose or broken pieces and all edges shall be thoroughly broomed clean. Contact surfaces of trench sides, curbs, manholes, catch basins, or other appurtenant structures in the pavement shall be painted thoroughly with a uniform coating of bitumen (Specification M 3.11.06, RS-1) just before any mixture is placed against them.

b. The binder course shall be repaired as necessary to maintain the surface of the pavement until placement of asphalt top course.

7. Top Course Pavement:

a. The top course shall be placed as shown on the drawings or as specified.

b. Prior to placement of the top course, the entire surface which the top course or modified top course is to be placed shall be broom cleaned and tack coated.

c. Prior to placing full width top course a 4 foot wide transition keyway shall be cold planed at all intersecting streets.

8. Pavement Placement:

a. Unless otherwise permitted by the Engineer for particular conditions, only machine methods of placing shall be used. Methods other than machine methods may be used, at no additional cost to the Owner. The equipment for spreading and finishing shall be mechanical, self-powered pavers, capable of spreading and finishing the mixture true to line, grade, width and crown. The mixtures shall be placed and compacted only at such times as to permit proper inspection and checking by the Engineer.

b. After the paving mixtures have been properly spread, initial and intermediate compaction shall be obtained by the use of steel wheel rollers having a weight of not less than 240 pounds per inch width of tread.

c. Final rolling of the pavement shall be performed by a steel wheel roller weighing not less than 285 pounds per inch width of tread at a mix temperature and time sufficient to allow for final smoothing of the surface and thorough compaction.
d. Immediately after placement of the new pavement, all joints between the existing and new pavements shall be sealed with bitumen RS-1 and sanded.

e. Where there is no backing for the edges of the pavement, the Contractor shall provide a gravel transition. The gravel transition shall be installed immediately after the pavement is placed, shall be feathered and extend a minimum of 18 inches, and shall be compacted using the same equipment as for pavement compaction. The gravel shall be uniformly graded material with a maximum size of 3/8 to ½ inch. The backing installation will be considered incidental to the pavement installation.

f. The Contractor shall furnish and install paving to provide transition or aprons for driveways and walkways impacted by new pavement installation.

D. Sidewalk Removal and Topsoil Placement:

1. Demolish existing sidewalks in accordance with Section 02050 – Demolition and Alterations.

2. Dispose of existing concrete off-site in accordance with all local, state and federal requirements.

3. Reshape the subgrade of the former sidewalk prior to placement of new topsoil. The subgrade shall be shaped to a true surface conforming to the existing slope of the walk, thoroughly rolled at optimum moisture content, and compacted to 90% of the maximum dry density. All depressions occurring shall be filled with suitable material and again rolled or tamped until the surface is smooth and hard.

4. After the subgrade has been prepared, a topsoil at optimum moisture content shall be placed, thoroughly compacted to 90% of the maximum dry density. The gravel shall be a minimum of 6 inches in thickness.

5. The finished surface shall have sufficient pitch from the outside edge to provide for surface drainage.

E. General:

1. Valve boxes, manhole frames, and all other castings shall be carefully set to the proposed finished grades.
F. Berms

1. Bituminous curbing shall be replaced as required. Curbing shall be machine layed and conform to grade of roadway and adjacent curb areas.

2. Bituminous berms shall be replaced as required. Berms shall be machine layed and conform to the grade of the roadways. Berms shall be placed in accordance with MHD Specification 470.20.

3.3 PROTECTION

A. Protect replacement work with barricades or other devices as approved by Engineer so that no damage occurs as a result of subsequent construction operations.

1. Repair damages or other irregularities to satisfaction of Engineer, at no additional cost to the Owner, before final acceptance by the Engineer.

3.4 GUARANTEE

A. During the one year guarantee period, the Contractor shall maintain the surfacing and shall promptly fill with similar material any depressions and holes that may occur so as to keep the surfacing in a safe and satisfactory condition for traffic.

3.5 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02525
SECTION 02601

MANHOLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Providing and constructing manholes as indicated and specified.

2. Base: Precast or Cast-in-Place concrete. Tops accurately shaped by ring forms to suit riser sections.

3. Walls (Risers and Cones): Precast Concrete

4. Top of Cone: Brickwork or reinforced concrete grading rings for adjusting frame to match finished surface not to exceed 12 inch.

5. Inverts: Form invert channels of brickwork or concrete. Conform to adjoining pipes size. Curve side inverts and lay out main inverts (where direction changes) in smooth curves of longest possible radius tangent to adjoining pipelines centerline.

6. Frames and Covers: Cast-iron, as indicated or specified.

B. Related sections includes the following:

1. Section 02200 - Earthwork

2. Section 03300: Cast-in Place Concrete

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:
1. Submit manufacturer's specifications and product data.

2. Submit manufacturer's written instruction for installing resilient connector.

1.4 DELIVERY, STORAGE AND HANDLING

A. Provide in accordance with Section 01610.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C150, Type II

B. Hydrated Lime: ASTM C207, Type S

C. Sand: Fine Aggregate for mortar, but passes No. 8 Sieve.

D. Brick: ASTM C32, Grade SS, but mean of five tests for absorption not to exceed 8 percent by weight.

E. Frames and Covers: Cast Iron minimum Class 25 conforming to ASTM A48, and as follows:

1. Castings to be free from scale, lumps, blisters and sandholes.


3. Thoroughly clean and hammer inspect.

4. Include frame and cover model numbers. Frames and covers shall be LeBaron or Neenal H-20 load rating.

5. Capable of withstanding AASHTO H-20 loading unless otherwise indicated or specified.

F. Aluminum Steps similar to:

1. Stock No. 12653B made by Aluminum Company of America, Pittsburgh, PA.

3. Stock numbers are for embedded steps, for steps to be attached after casting, shape of exposed parts to be like stock numbers, but other ends shaped to suit inserts.


1. Part number is for steps to be driven into preformed holes; for steps to be driven into embedded plastic inserts, shape of exposed parts to be like part number, but other ends to suit inserts.

2. The copolymer polypropylene conforming to ASTM D4101-82 PP200B33454 with a minimum carbon black content of 1/2% by weight or other demonstrated equivalent sunlight protection system.

H. Steps capable of resisting following loads without loosening or damaging:

1. Minimum horizontal pull out load 1600 pounds (800 pounds per leg).

2. Minimum vertical load 800 pounds.

2.2 PRECAST CONCRETE SECTIONS

A. ASTM C478 and following modifications:

1. Wall thickness: as indicated.

2. Cement: ASTM C150, Type II, otherwise as directed by Engineer.


4. Cure by subjecting to saturated steam at temperature between 100 and 130 degrees F. for 12 hours or more.

5. Cast or drill only two lift holes in each section.

6. Clearly mark date of manufacture and name or trademark of manufacturer on insides of walls on all sections.

7. Accept on basis of material tests and product inspection.

B. Cones and Conical Transitions similar in design and construction to riser sections. Use flat slab tops only where indicated.
2.3 JOINTS

A. Between precast sections: Butyl rubber-based sealants per Type B, AASHTO M198, but no bitumen content.

B. Resilient connectors for pipes to precast sections: ASTM C923, and to manufacturer's standards. Do not use connectors using castings and bolts with non-resilient bearing.

C. Rubber ring waterstops for use in pipe-to-manhole joints: Rings of resilient material that will fit snugly over pipes, held firmly against pipe surface by means of a mechanical take-up device which when tightened will compress resilient material or by a stretch fit. Waterstop designed and installed so that leakage between pipe and manhole is minimized.


D. Non-shrink mortar for pipe connections to existing manholes:

1. Masterflow 713 Grout made by Master Builders, Cleveland, OH.

2. Five Star Grout made by U.S. Grout Corp., Old Greenwich, CT.

3. Upco made by Upco Co., Cleveland, OH.

4. Or acceptable equivalent product.

2.4 MIXES

A. Concrete: Cast-in-place, Class A, Section 03300

B. Mortar:

1. For Brickwork: Mix portland cement, hydrated lime and sand in proportion by volume of 1: 1/2: 4-1/2. Use sufficient water to form workable mixture to make mortar damp, just short of "balling".
2. For Plugging lift holes: Mix portland cement and sand in proportion by volume of 1: 1-1/2, with sufficient water.

PART 3 - EXECUTION

3.1 SETTING PRECAST SECTIONS

A. Set verticals with sections and steps in alignment. Set bases true to line and elevation.

B. Install Butyl rubber-based sealants in joints between sections.

C. Plug holes for handling with mortar. Hammer mortar into hole until dense and excess of paste appears, then smooth flush with adjoining surface.

3.2 LAYING BRICKWORK AND GRADING RINGS

A. Moisten bricks, before laying. Moistening grading rings NOT PERMITTED.

B. Lay bricks and grading rings in full bed and joint of mortar without subsequent grouting, flushing or filling; bond thoroughly.

3.3 PLASTERING AND CURING BRICK MASONRY

A. Plaster outside faces with mortar for brick: 1/4 in. to 3/8 in. thick.

B. Moisten brick masonry before application of mortar.

C. Spread and trowel plaster carefully.

D. Check after hardening by tapping for bond and soundness.

E. Remove and replace unbonded and unsound plaster.

F. Protect from too rapid drying by moist burlap or as approved.

G. Protect from weather and frost.

3.4 JOINTING AND CONNECTIONS

A. Use joints between precast sections, and between pipes and precast sections conforming to related standards and manufacturer's instruction.
B. Hold rubber ring water stops for pipe-to-manhole firmly against pipe surface by mechanical take-up device to compress resilient material when tightened. Install to minimize leakage.

C. Apply non-shrink mortar according to manufacturer's instruction.

D. Close openings for future connection with brick masonry bulkhead.

3.5 SETTING FRAMES AND COVERS

A. Set frames with top conforming to finished ground or pavement surface as indicated.

B. Set circular frames concentric with top of masonry.

C. Set frames in full bed of mortar to fill and make watertight the space between masonry top and bottom flange of frame.

D. Place thick ring of mortar extending to outer edge of masonry, around bottom flange. Finish mortar smoothly and give a slight slope to shed water away from frame.

E. Place concrete collar around frame when placing permanent pavement.

F. Place covers in frames on completion of work.

3.6 INSTALLING STEPS

A. Embed or attach aluminum steps in wall during or after casting.

1. Embedded Steps: Use cleaning agents to remove dirt, oil, and grease. Rinse, dry and coat with heavy-bodied bituminous material, parts to be embedded. Dry and secure in forms for embedment during casting.

2. Attached Steps: Drive into plastic inserts. Embed inserts during casting or drive inserts into holes formed during casting.

3. Embed plastic coated steel steps during casting or attach after casting: Drive into holes formed during casting, or into embedded plastic inserts.

3.7 LEAKAGE TESTS:

A. Inspect for visible leakage after backfill with ground water at normal level.

B. Locate visible leakage inside manhole.

C. Repair leaks.
3.8 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02601
SECTION 02622
POLYVINYL CHLORIDE GRAVITY PIPE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following:

1. Providing and testing of pipe, pipe fittings and specials, jointing materials, and accessories, of various sizes, classes, joints and types, and appurtenant work, at the locations and to the lines and grades as indicated and/or as directed, complete in place, in accordance with the drawings and specifications.

2. The pipe specified under this section shall include all gravity flow sanitary sewers.

B. Related sections include the following:

1. Section 02210 - Earth Excavation, Backfill, Fill and Grading

2. Section 02601 - Manholes

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:

1. Submit shop drawings or descriptive literature, or both, showing pipe dimensions, joints, joint gaskets, and other details for each size of pipe to be furnished for the project. All pipe furnished shall be manufactured only in accordance with the specifications and the drawings.
1.4 QUALITY ASSURANCE

A. Provide in accordance with Section 01400 and as specified.

1.5 DELIVERY, STORAGE AND HANDLING

A. Provide in accordance with Section 01610.

PART 2 - PRODUCTS

2.1 PIPE FITTINGS AND SPECIALS

A. The polyvinyl chloride pipe and fittings, including those required for stubs, shall conform to ASTM Standard Specifications for Type PSM PVC Sewer Pipe and Fittings, Designation ASTM D3034, latest revision, for 8-inch-pipe. The pipe shall have a maximum pipe diameter to wall thickness ratio (SDR) of 35. The pipe shall be tested by the flat plate deflection method at a minimum of 45 psi at 5 percent deflection in accordance with ASTM D 2412.

B. Specials, if required, shall conform to the Specifications for straight pipe insofar as applicable and to the details indicated on the Drawings or bound into the back of the Specifications.

2.2 JOINTS

A. Joints for the polyvinyl chloride pipe shall be push-on bell and spigot joints using elastomeric ring gaskets. The gaskets shall be securely fixed into place in the bells so that they cannot be dislodged during joint assembly. The gaskets shall be of a composition and texture which is resistant to common ingredients of sewage and industrial wastes, as well as petroleum products (oil, gasoline, etc.) and groundwater, and which will endure permanently under the conditions of the proposed use. The joints shall conform to ASTM Standard Specifications for Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals, Designation D3212.

2.3 INSPECTION, TESTS AND ACCEPTANCE

A. All pipe delivered to the job site shall be accompanied by test reports certifying that the pipe and fittings conform to the above-mentioned ASTM Specifications. In addition, the pipe shall be subject to thorough inspection and tests, the right being reserved for the Engineer to apply such tests as he deems necessary.

B. All tests shall be made in accordance with the methods prescribed by the above mentioned ASTM Specifications, and the acceptance or rejection shall be based on the test results.
C. The Contractor shall furnish all labor to assist the Engineer in inspecting the pipe. Pipe will be inspected upon delivery, and such as does not conform to the requirements of this contract shall be rejected and shall immediately be removed from the project site by the Contractor.

PART 3 - EXECUTION

3.1 HANDLING PIPE

A. All pipe shall be stored at the site until installation in a manner which will keep the pipe at ambient outdoor temperatures. Temporary shading shall be provided as required to meet this requirement. Simply covering the pipe which allows temperature build-up when exposed to direct sunlight will not be permitted.

B. Care shall be taken to avoid damaging the pipe and fittings.

3.2 INSTALLATION

A. Each pipe unit shall be inspected before being installed. No single piece of pipe shall be laid unless it is generally straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16-inch per foot of length. If a piece of pipe fails to meet this requirement for straightness, it shall be rejected and removed from the site. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit.

B. Suitable bell holes shall be provided, so that after placement, only the barrel of the pipe receives bearing pressure from the supporting material. Special care shall be taken to hold the trench width at the crown of the pipe to the maximum indicated on the Trench Detail included in the Details Section of these specifications.

C. All pipe and fittings shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.

D. Pipe and fittings shall be installed to the lines and grades indicated on the Drawings. Care shall be taken to ensure true alignments and gradients.

E. Before any joint is made, the previously installed unit shall be checked to assure that a close joint with the adjoining unit has been maintained and that the inverters are matched and conform to the required grade. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber or other unyielding object.

F. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's
recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe units together so that they will fit with minimum open recess inside and outside and have tightly sealed joints. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends.

G. Joints shall not be "pulled" or "cramped" unless permitted by the Engineer.

H. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units and new gaskets.

I. Details of gasket installation and joint assembly shall follow the directions of the manufacturers of the joint materials and of the pipe, all subject to review by the Engineer. The resulting joints shall be watertight and flexible.

J. All premolded gasket joint polyvinyl chloride pipe of a particular manufacturer may be rejected if there are more than five unsatisfactory joint assembly operations or "bell breaks" in 100 consecutive joints, even though the pipe and joint conform to the appropriate ASTM Specifications as hereinbefore specified. If the pipe is unsatisfactory, as determined above, the Contractor shall, if required, remove all pipe of that manufacturer of the same shipment from the work and shall furnish pipe from another manufacturer which will conform to all of the requirements of these specifications.

K. Open ends of pipe and branches shall be closed with polyvinyl chloride stoppers secured in place in an acceptable manner.

L. After each pipe has been properly bedded, enough crushed stone shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment. Bell holes, provided for jointing, shall be filled with crushed stone and compacted, and then crushed stone shall be placed and compacted to complete the pipe bedding.

M. The Contractor shall take all precautions to prevent flotation of the pipe in the trench.

N. At all times pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs, or by other acceptable means.

O. If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe.

P. Pipelines shall not be used as conductors for trench drainage during construction.
3.3 ALLOWABLE PIPE DEFLECTION

A. Pipe provided under this Specification shall be so installed as to not exceed a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.

B. Upon completion of a section of pipe, including placement and compaction of backfill, the Contractor shall measure the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer, and be reviewed by the Engineer. The section of pipe must be placed and backfilled for a minimum of 90 days before the deflection can be measured.

C. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem without additional compensation.

3.4 CLEANING

A. Care shall be taken to prevent earth, water and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out the pipeline and manholes being careful to prevent soil, water and debris from entering any existing pipe.

3.5 TESTING OF PIPE

A. Visual inspection of the completed pipe will be conducted by the Engineer after completion. If any part thereof shows any pipe, manhole or joint which allows infiltration of water in a noticeable stream or jet, the defective work or material shall be replaced or repaired as directed.

3.6 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02622
SECTION 02647
CONNECTING TO EXISTING WATER MAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following:

1. Connecting to existing mains.

B. Related sections includes the following:

1. Section 02210 - Earthwork

2. Section 02615 - Ductile Iron Pipe and Fittings

3. Section 02675 - Disinfection of Water Mains

4. Section 02704 – Pressure and Leakage Testing

5. Section 03300 - Concrete

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: The Contractor shall verify field conditions by test pits or other methods prior to construction.

3.2 INSTALLATION

A. The Contractor shall make all connections to the existing mains as indicated in the Contract Documents.

B. The Contractor shall develop a program for the construction and putting into
service of the new work subject to the approval of the Engineer. All work involving cutting into and connecting to the existing water mains shall be planned so as to interfere with operation of the existing facilities for the shortest possible time.

C. The Contractor shall have all preparatory work done prior to making the connection and shall provide all labor, tools, material, and equipment required to do the work in one continuous operation.

D. The Contractor shall have no claim for additional compensation, by reason of delay or inconvenience, for adapting his operations to the requirements of the Owner.

E. Under no circumstances shall any customer be without water for a period of more than 4 hours without prior written approval of the Owner. Should it appear that any customer will be without water for more than 4 hours, the Contractor shall install temporary water service at no additional cost to the Owner.

F. The Owner does not guarantee a tight shut-off for existing local community water valves. No damages shall be claimed by the Contractor for delays in dewatering pipelines nor shall any damages be claimed because of water leaking through closed valves after dewatering is completed. It shall be the responsibility of the Contractor to provide the means to dewater the excavation if required when making connections.

G. The Contractor shall be responsible for the following restrictions on shutdown of water mains:

1. City Distribution System Valves to be operated only by City DPW personnel.

2. One month advance notice for shutdown requests shall be given to the Authority's Project Site Representative and Superintendent.

3. Quincy’s distribution system valves and hydrants to be operated only by Quincy DPW personnel.

4. One week advance notice for shutdown requests of Quincy’s main shall be given to Quincy DPW.

3.3 APPLICATION:

A. Special Techniques: Tapping Connections:

1. Tap connections to existing mains shall be made with service pressure in the main, using tapping sleeve and valve and a suitable tapping machine.

2. Tapping valves shall be flanged by mechanical joint and be as specified in Section 02640.
3. Tapping sleeves shall be ductile iron with a split horizontal flange. Contractor shall verify existing pipe materials and diameter prior to ordering sleeves.

4. Other connections to existing mains shall be made with the main out of service, unless otherwise directed by the Engineer.

3.4 CLEANING

A. Contractor shall clean the existing main with wire brush and wash the pipe surface and the tapping sleeve and valve interior with 5% hypochlorite (bleach) solution.

3.4 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02647
SECTION 02660

WATER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following:

1. Provide new 6-inch ductile iron CL52 water main per Section 02615, from an existing service, including corporation stops, curb stops and boxes, as shown on the drawings or as directed by the Engineer.

2. Also where shown on the drawings, install small diameter services (1-inch, 1½-inch and 2-inch) shall be brought to each new water fountain along the water pipe routes.

3. Install a new irrigation system to the Veteran’s Area per Section 02811.

4. Conduct system disinfection per specification Section 02675.

5. Conduct pressure and leakage testing of pipe per specification Section 02704.

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:

1. Submit manufacturer's technical product data or descriptive literature, or both, showing services, corporation stops, curb stops, fittings and other details for each type of service to be furnished for the project.

2. For informational purposes only, submit manufacturer’s written installation instructions.
1.4 QUALITY ASSURANCE

A. Provide in accordance with Section 01400 and as specified.

B. Manufacturer's Qualifications: Firms regularly engaged in manufacture of potable water systems materials and products, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

PART 2 - PRODUCTS

2.1 FOUNTAIN SERVICES

A. Unless otherwise specified, all pipe for 1-inch, 1½-inch and 2-inch mains shall be polyethylene PE 3408, Class 200 tubing and shall conform to the provisions of AWWA specification C901-88.

B. The fountain services shall be ¾-inch polyethylene PE 3408, Class 200 tubing.

C. The fountain pipe shall be ¾-inch galvanized steel tubing, mounted to a 6-inch by 6-inch granite post (embedded 2-feet below grade).

2.2 CORPORATIONS, CURB STOPS AND SADDLES

A. The corporation stops shall meet the most recent revision of the AWWA standard "Threads for Underground Service Line Fittings" (AWWA C800). Corporation stops shall be Mueller 110, Model H-15008, designed for 175 psi test pressure and manufactured by Mueller Inc. Stops to have full keyway and rigid liners.

B. Curb stops shall be Mueller H15219 Mark II Orisal with drain suitable for use with polyethylene tubing specified hereinbefore. Stops shall have integral checks, O-ring seal and shall be furnished with rigid liners.

C. Curb stop boxes shall be cast iron Buffalo type with recessed lid with pentagon bolt, adjustable sliding type.

D. Service saddles for 2-inch taps shall be Smith-Blair 313 Double Strap. Bodies shall be ductile iron and straps shall be electrogalvanized carbon steel. Units shall be complete with Buna-N gaskets.

2.5 FITTINGS

A. Unless otherwise approved, only compression type fittings manufactured by Mueller Inc., or equal, shall be used.

B. Mueller brass tees shall be used to provide 1-inch services off of 2-inch
polyethylene tubing.

C. Adapters required to allow connection to existing services shall be provided.

PART 3 - EXECUTION

3.1 CONSTRUCTION

A. After successful testing and chlorination, water services shall be installed as a "wet" tap as shown on the drawings, specified, or directed by the Engineer. Exact locations of services shall be located in the field by the Engineer. A service shall be provided to the property line of parcels of property along the water main route. All services shall be installed to a minimum depth of 4'-6" unless specifically shown or directed otherwise by the Engineer.

B. Water service trenches shall be excavated and backfilled in accordance with Section 02210 of this Specification and in conformance to the details. Services to be installed beneath paved roadways shall be driven beneath the pavement utilizing a pneumatically driven device such as "Hole Hog", or equal.

C. A No. 12 trace wire shall be attached to the corporation stop and curb box, for later use in locating the services exact position. The wire shall be stripped at each end, connected to the corporation, looped around the service tubing approximately every 3-feet, and attached to the curb stop. Trace wire shall also be attached to the ductile iron pipe and connected to the blowoff-meter pit for all 2-inch mains.

D. Connections to the existing services shall be thoroughly flushed prior to connecting. Contractor shall coordinate and assist Water Department personnel in removal of the household meter and filters and flushing the entire service line to prevent scale-debris from blocking fixtures and appliances.

3.2 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02660
SECTION 02675
DISINFECTION OF WATER MAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following:

1. Flushing and disinfection of pipelines.

B. Related section include the following:

1. Section 02615 - Ductile Iron Pipe and Fittings.

2. Section 02640 – Hydrants, Valves and Appurtenances.

3. Section 02704 – Pressure and Leakage Testing

4. Section 02736 – Temporary Connections

1.3 SYSTEM DESCRIPTION

A. Disinfect all water pipe installed under this contract. Disinfection shall occur subsequent to the installation of the new pipe in accordance with Section 02615 and 02660.

B. The location of new pipe line, air release and blow-off valves are shown on the Drawings.

C. Pipeline disinfection shall be performed in conjunction with the related work items of dewatering, testing, flushing and discharge of water with high concentrations of chlorine, prior to placing newly installed water main in service. The Engineer will develop the particulars of the "work plan" to accomplish the above tasks, however, the Contractor's responsibility shall include:
1. Provision of the chlorine product for disinfection at the rate and dose specified shall be in accordance with AWWA and Quincy DPW standards.

2. Provision of pipeline taps for dosing and testing of chlorinated water, as necessary.

3. Installation and removal of bulkheads required for testing.

4. Labor and equipment necessary to dispense the dose chlorine at points and rates as directed by the Engineer.

5. Labor and equipment to operate newly installed mainline valves, air release valves, and blowoff valves as necessary and directed by the Engineer.

D. The Contractor shall be responsible for disinfecting and putting into service new water mains which shall become the property of the Owner.

E. Contractor shall be responsible for coordinating all activities with the Owner if it is intended to use City hydrants or water for disinfection purposes.

1.4 PROJECT/SITE CONDITIONS

A. All flushing water shall be discharged in accordance with local, state and federal regulations.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate operation of existing valves, timing and duration of shut-down of existing mains, and disinfecting, flushing and re-energizing of the water main with the Engineer and where applicable with the Owner including notification of the following prior to the stated work:

1. Valve Operations: Notify Engineer three (3) days prior to stated work.

   a. The opening and closing of existing valves shall be performed by Municipal Water personnel only.

2. Disinfecting and Flushing: Notify Engineer three (3) days prior to stated work.

3. Notification shall include location of work, length and diameter of the

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pipe and other pertinent information.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Calcium hypochlorite shall conform to AWWA B300.

1. Granules with 70 percent available chlorine.

B. Liquid sodium hypochlorite shall conform to AWWA B300.

C. Owner-approved backflow preventer devices.

PART 3 - EXECUTION

3.1 PREPARATION

A. General:

1. Perform disinfection and flushing in accordance with AWWA C651.

2. The Engineer will review disinfection procedure, designate dosage and will perform necessary water quality tests to verify that disinfection has been accomplished according to public health standards.

3. If connections are made to municipal water systems, Owner-approved backflow preventer shall be installed in the line to prevent backflow or siphonage of water into the municipal system.

B. Flushing:

1. Prior to chlorination, mains shall be properly flushed by the Contractor. In general, flushing shall be performed at a flow rate required to achieve a minimum velocity of 2.5 feet per second (approximately 1600 GPM in a 16-inch main, 900 GPM in a 12-inch diameter main, 400 GPM in 8-inch diameter main and 220 GPM in a 6-inch main, and 30 GPM in a 2-inch main). Flushing shall be performed for a sufficient period of time to allow for a minimum of 3 volume changes of water in the main (approximately 20 minutes per 1000-foot of main at the above flow rate).
C. Discharge:

1. Following disinfection, water with high concentrations of chlorine shall be discharged to the nearest sanitary sewer or drain.
   a. The Contractor shall notify the Engineer of the specific location where chlorinated water will be discharged at least one week in advance of proposed discharge. The Engineer will then inform the Owner of the sanitary sewer.

2. Water with high concentrations of chlorine shall be dechlorinated prior to its discharge to storm drains or natural bodies of water.

3.2 INSTALLATION

A. Calcium Hypochlorite:

1. Use only as a solution.

2. Pump into pipe with a suitable chemical feed pump.

3.3 APPLICATION

A. Special Techniques:

1. Disinfect pipes by the continuous feed or slug method.
   a. Continuous feed method:
      (1) Feed chlorine into pipe so water entering contains at least 25 mg/l of available chlorine.
      (2) Apply chlorine continuously until entire pipe is filled with chlorine solution.
      (3) Retain treated water in pipe for at least 24 hours.
      (4) Ensure that chlorine residual at end of test is at least 10 mg/l.
      (5) Operate all valves and hydrants to insure disinfection. Manipulate valves to prevent super chlorinated water from entering existing distribution system.

   b. Slug Method
      (1) Slowly feed through the main a slug of water having a chlorine concentration of 100 mg/l so that all parts of the main and appurtenances are exposed to the highly
concentrated solution for a period of at least three (3) hours.

(2) Water from existing distribution system or other approved supply source shall be made to flow at a constant measured rate, into the new main.

(3) At a point not more than ten (10) feet downstream from the beginning of the new main, water entering the new main shall receive a constant dose of free chlorine having a concentration of 100 mg/l.

(4) The free chlorine shall be measured as it moves through the main. If the level drops below 50 mg/l, flow shall be stopped chlorination equipment shall be relocated to the head of the slug and as flow is resumed, chlorine shall be applied to restore the free available level to 100 mg/l.

(5) Valves and hydrants shall be operated as the chlorinated water flows past them to insure disinfection occurs.

2. Ensure that appurtenances are fully disinfected.

3.4 FIELD QUALITY CONTROL

A. Tests:

1. Bacteriological test samples shall be collected by the Contractor after the chlorine solution has been flushed out of the pipe.

2. Disinfection shall be repeated, as necessary, to produce satisfactory bacteriological samples.

3. Twenty-four (24) hours after the main has been flushed of chlorinated water, bacteriological samples shall be taken. Water samples shall be taken from corporation stops along the length of the water main as designated by the Engineer. A minimum of two (2) samples shall be taken, per 3,000 foot of pipe and on each street, each in duplicate, in sterile bottles and sent to a State approved private laboratory for analyses. The Contractor shall perform all necessary work including delivery of samples to a certified laboratory, and shall include the cost for sampling and analysis in his bid price. The results of the tests on these samples will determine the acceptance of the work and allow these new mains to be connected to the Owner's system. The failure of any sample to pass the laboratory tests shall require the Contractor to re-flush and rechlorinate the mains and re-sample and test the water until acceptable results are obtained, all at no additional cost to the
Owner.

B. Main Activation

1. Upon receipt of satisfactory bacteria sample test results and successful pressure tests, Contractor shall notify Owner to have the Owner’s personnel operate all valves required to place mains in service.

2. Contractor shall note that work under this Contract shall not be considered completed until satisfactory installation and testing of the water mains have been completed.

3.5 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02675
SECTION 02704

PIPELINE PRESSURE AND LEAKAGE TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following:

1. Perform field hydrostatic pressure and leakage testing of pipes.

B. Related section includes the following:

1. Section 02615 - Ductile Iron Pipe and Fittings
2. Section 02640 – Hydrants, Valves and Appurtenances
3. Section 02660 – Water Systems
4. Section 02736 – Temporary Connections

1.3 DEFINITIONS

A. Leakage - Leakage is defined as total amount of water introduced into pipe during leakage test to maintain test pressure.

1.4 SYSTEM DESCRIPTION

A. Existing flow test data indicates the working pressure of the pipeline ranges between 85 and 100 psi.

B. Pipe, valves and appurtenances installed under Sections 02615, 02640 and 02660 shall be tested in accordance with the requirements of this section.

1.5 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:
1. Testing schedule and test procedure.
   a. Indicate proposed time and sequence of testing on schedule.
   b. Indicated test procedure requirements as follows:
      (1) Limits of each pipe tested.
      (2) Position of all valves during testing.
      (3) Location of temporary bulkheads.
      (4) Other applicable procedures.

1.6 SEQUENCING AND SCHEDULING

A. Complete pressure and leakage testing of pipes prior to final cleaning and disinfection; Engineer shall be present during all testing.

1. Notify Engineer of time and place of testing at least 3 days prior to commencement of work.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Provide test equipment as follows:

1. Piping connections between pipe tested and water source.

2. Equipment, materials, and facilities required to perform specified tests including but not limited to the following:
   a. Pumping equipment
   b. Water meter
   c. Pressure gauges

3. Sectionalizing devices required including but not limited to the following:
   a. Flanges
b. Valves
c. Bulkheads
d. Bracing
e. Blocking

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide blocks, anchors, and supports for pipe before test pressure is applied.

3.2 INSTALLATION

A. Water:
   1. Schedule filling of line through Engineer at least three (3) days in advance of testing.
   2. Do not allow water to enter other parts of the pipeline, not subject to testing, unless approved by the Engineer.
   3. Dispose of test water in a manner approved by the Engineer.

B. Venting:
   1. Ensure that air release valves and other venting devices are properly installed and placed in open position when filling pipe with water.
   2. Do not close hand-operated vent valves until water flows in an uninterrupted stream from each valve.

3.3 APPLICATION

A. Pressure Testing:
   1. All pipe and appurtenances installed shall be hydrostatically tested in accordance with ANSI/AWWA C600, latest version unless stated otherwise herein.
      a. Test pressure, expressed in terms of feet of water, applied at any point in pipe equals arithmetic difference between specified test pressure plane elevation and elevation of
horizontal center line of pipe at selected location.

b. Multiply value by 0.433 to obtain pounds per square inch.

c. Ensure pressure gauges are accurately calibrated.

d. Do not attempt pressure testing until all air has been vented from the mains.

2. All new water mains which shall become the property of the Owner shall be pressure tested at 150 psi for a continuous period of two hours.

B. Leakage Testing:

1. Conduct leakage testing in conjunction with pressure tests.

2. Ensure that joints in piping are watertight and free from visible leaks during leakage test.

3. Leakage Test Pressure:

   a. Maintain specified normal operating line pressure for pressure testing of reach during leakage test.

   b. Maintain hydrostatic pressure within plus or minus 5 percent during entire time of leakage measurements.

4. Leakage Measurement:

   a. Do not attempt measurement of leakage until trapped air has been vented and constant test pressure has been established.

   b. Measure leakage by means of an approved water meter installed in the pressure piping on discharge of the pump.

      (1) Ensure that water meter is accurately calibrated.

5. Allowable Leakage:

   a. Ensure that pipe reach does not exceed the allowable leakage rate.

   b. Calculate allowable leakage with following formula:

      \[ Q = 0.0075 \text{ DLN} \] where
Q = allowable leakage in gallons per hour
D = nominal diameter of pipe in inches
L = length of section tested in thousand feet (1000-foot maximum)
N = square root of avg test pressure in psi

c. Calculate allowable leakage separately for each diameter and add resulting allowable leakage rates to obtain total allowable leakage for entire reach.

3.4 FIELD QUALITY CONTROL

A. Inspection:
   1. Locate defective joints and pipe materials during pressure testing.
   2. Locate and repair leaking joints and other defective items of work to reduce pipe leakage to an amount acceptable to Engineer, or where applicable, the Owner’s requirements.

3.5 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02704
SECTION 02736
TEMPORARY CONNECTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following:

1. Providing, disinfecting, and maintaining temporary potable water bypass pipe, connections, and services as indicated and as specified and later remove temporary facilities.

2. Have readily available sufficient additional quantity of bypass pipe, connections of suitable sizes to replace or supplement the temporary facilities in event these prove inadequate in any way.

3. Performing all appurtenant work including but not limited to excavation and backfilling, constructing ramps at driveways and other access ways, replacement of temporary and permanent pavement, restoration of public and private property.

B. Related section includes the following:

1. Section 02200 - Earthwork

2. Section 03300 - Cast-In-Place Concrete

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES.

1. Before commencing work, submit for Engineer's review and approval, proposed layout plan and operations schedule for installing and removing temporary bypasses, connections and services.
2. Submit for Engineer's review and approval, a list of materials with sizes for temporary bypass, connections and services.

1.4 QUALITY ASSURANCE

A. Provide in accordance with Section 01400 and as specified.

B. Use only materials that are suitable for potable water transmission and distribution.

C. Provide temporary connections capable of withstanding service pressure of 150 psi.

D. Take water for temporary connections from Owner's nearest available hydrants remaining in service.

1.5 SAFETY REQUIREMENTS

A. Prevent contamination of contiguous potable water distribution system and services.

B. Coordinate and cooperate with Owner's water utility and fire department to maintain water distribution and fire protection capability.

C. Take all precautions for public safety.

D. Refer to Section 01500 regarding water supply for Contractor's operations.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide pipe, fittings, hoses, connections, valves suitable for potable water service at 100 psi and as approved by Engineer.

PART 3 - EXECUTION

3.1 GENERAL

A. Furnish, install, maintain and later remove devices necessary to ensure public safety as required and as approved.

B. Install, operate, maintain, test, disinfect and remove temporary facilities including bypass, connections, laterals, customer services and customer
connections and temporary fire hydrants as indicated on drawings, as specified and as approved by Engineer.

C. Make installation suitable for temporary potable water service pressures to 150 psi without leakage.

D. Do not operate Owner's or user's valves, stops and hydrants without Engineer's permission for specific valves, stops and hydrants.

E. Test temporary facilities in presence of Engineer before taking Owner's water main out of service.

F. Disinfect temporary facilities to meet Engineer's approval and in accordance with Section 02675 prior to placing such temporary facilities in service.

G. Make attachments and connections to fire hydrants and fire protection systems in a manner which can be easily and quickly removed to permit use of fire hydrants and fire protection systems for fire fighting purposes.

H. Notify in writing the Owner and the Owner's water utility and fire department 48 hours in advance of connecting and disconnecting temporary and permanent facilities so that representatives of Owner's water utility and fire department may be present at installation or removal of permanent and temporary connections and to permit Owner to inform customers and users as Owner deems necessary.

I. Do not install temporary bypass, connections and customer services across streets except as permitted by Engineer.

J. Connect to the temporary bypass water mains that are to remain in service as indicated and approved by Engineer.

K. After water mains are returned to service, remove temporary facilities not required for remaining work and restore and clean up affected areas to the approval of the Engineer.

3.2 TEMPORARY BYPASS

A. Provide bypass not less than sizes indicated on drawings and in any case not less than 2-in. diameter.

B. Lay bypass out of traveled way in manner to protect the bypass from damage.

C. Where bypass is approved to cross streets and street intersections, lay in trench and place temporary pavement over bypass except as permitted otherwise in writing by the Engineer.
D. Where bypass crosses driveways and similar access ways to properties, construct suitable ramp to allow driving and passing over pipe except where Engineer requires bypass be laid in trench with temporary pavement over bypass.

E. Keep existing fire hydrants in service by making appropriate connections to bypass or by installing and maintaining temporary fire hydrants adjacent to each existing fire hydrant affected by work until restored to service.

F. Provide each temporary fire hydrant with individual valve control.

G. Provide temporary fire hydrants with fire hose connections compatible with existing fire hydrant hose connections as approved by the Engineer.

H. Satisfactorily flush existing hydrants, to which bypass is connected for water supply, prior to making connections to prevent stagnant or discolored water from entering bypass.

I. If bypass proves inadequate for temporary service, replace or supplement bypass as appropriate to provide adequate temporary service, including replacement with larger diameter bypass, as approved by the Engineer.

3.3 TEMPORARY SERVICE CONNECTIONS

A. Furnish, install, maintain and later remove temporary service connections from the bypass to each building and service supplied by water main to be removed from service.

B. Lay temporary connections out of traveled and access ways where possible.

C. Temporary service connections ramped or in trench where directed and approved by the Engineer.

D. Provide temporary service connections equal to or larger size than permanent service connections.

E. Install and maintain pressure regulators for temporary services where necessary.

F. Install and remove temporary service connections and back clean permanent services at times when work can be observed by the Engineer and other representatives of the Owner.
G. Coordinate and cooperate with service user, Owner's water utility and fire department, to assure minimum disturbance to fire protection system and other special and automated uses.

H. Make temporary service connections to user service line, sill cock, or other convenient and reasonable points and acceptable to the Engineer.

3.4 CONTRACT CLOSEOUT

A. Provide in accordance with Section 01700.

END OF SECTION 02736
SECTION 02811

IRRIGATION SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION

A. Provide underground sprinkler system as shown and specified. Work includes:

1. All permits and related inspections
2. Controllers, enclosures and control wire.
3. Year one fall winterization and spring start-up service.
4. Excavation and backfilling related to underground sprinkler system work.
5. Install all plumbing and electrical work to comply with all local building code requirements
6. Testing of all mains, laterals, fittings, sprinkler heads, quick coupler valves, control valves and controllers.
7. Associated interior and exterior plumbing and electrical work, including controller connections and accessories to complete the system
8. Include a minimum of two (1) full days to review the operation of the irrigation system with owners’ representative once the system is 100% operational.
9. The underground sprinkler system shall be constructed using the sprinkler heads, valves, piping, fittings, controllers, wiring and accessories of the sizes and types need to cover the area shown and per this specification.
10. The underground sprinkler system shown on the drawings as a delineated area to be covered. Contractor responsible to design irrigation system to cover this area. System design will be submitted to the Town and Engineer for approval prior to installation.

1.02 RELATED WORK

A. Install irrigation mainline piping prior to installation of subgrade drainage system. (if applicable)
1.03 QUALITY ASSURANCE

A. The contractor shall coordinate the work related to this contract with the work of other trades.

B. Construct the system to grade and in conformance to areas and locations designated on the drawings.

C. Excavating, backfilling and compacting operations: Comply with earthwork requirements and as specified.

D. Installer’s qualifications: Minimum of five (5) years of experience installing underground sprinkler systems of comparable size.
   1. Underground sprinkler system work shall be performed only by experienced workmen familiar with sprinkler system installation work under the supervision of a qualified experienced superintendent.

E. All materials shall be supplied from a single source distributor.

1.04 SUBMITTALS

A. Submit five (5) copies of manufacturer’s product data and installation instructions for approval for each of the system components including all sprinkler heads, automatic valves, controllers, and quick coupling valves.

B. Submit shop drawings:
   1. Plans to layout and products shall be submitted by the contractor to the owner’s representative at least thirty (30) days prior to installation.
   2. Include piping layout and details illustrating location and types of sprinkler heads, valves, and control systems. Show sprinkler head coverage.

C. Provide sprinkler system record drawings upon irrigation system acceptance. All record documents shall be bound into notebooks and shall include the following:
   1. Include written instructions for future service and maintenance.
   2. Include instruction sheets and parts lists covering all operating equipment.
   3. Submit as-built drawings.
   4. Maintain record drawings current with actual construction on a daily basis during system installation.
   5. Provide a reproducible irrigation system record drawing showing sprinkler heads, valves, drains, piping layout, controllers, quick coupler and automatic
valves. Final payment shall not be made for this work without the receipt of an accurate as-built drawing.

1.05 DELIVERY, STORAGE AND HANDLING

A. Store and handle materials to prevent damage and deterioration.

B. Deliver plastic piping in bundles, packaged to provide adequate protection of pipe ends, both threaded and plain.

C. Deliver irrigation system components in manufacturer’s original undamaged and unopened containers with labels intact and legible.

D. Provide secure, locked storage for valves, sprinkler heads and similar components that cannot be immediately replaced, to prevent installation delays.

1.06 GUARANTEE

A. Guarantee shall include responsibility for removal and replacement of work, which conceals underground sprinkler system work.

B. Guarantee underground sprinkler system against defects in workmanship and materials for one (1) year from date of acceptance.

C. Guarantee includes contractor returning to the site for fall winterization and spring start-up service.

D. Guarantee that all trenches and other disturbed areas shall be free from heaving and/or settling by more than one-quarter (1/4") inch. If necessary adjust the grade, re-grade the trench and re-seed. This no settlement guarantee shall extend over the entire one (1) year guarantee from date of acceptance.

PART 2 – PRODUCTS

2.01 GENERAL MATERIALS

A. The contractor shall use materials as specified. Material other than specified shall be permitted only after written application by the contractor and written approval by the owner’s representative.

B. All material to be incorporated in this system shall be new, without flaws or defect and of quality and performance as specified. All material overages at the completion of the installation are the property of the contractor and are to be removed from site.
2.02 MATERIALS

A. Pipe and Fittings

1. Pipe sizes shall be as need to provide irrigation coverage

2. All pipe damaged or rejected because of defects shall be removed from the site at the time of said rejection.

3. Primer and solvent for use with PVC pipe to conform to ASTM D2564. Primer to be purple in color. Solvent to be appropriate for pipe and fitting type and weather conditions.

4. All PVC pipes two and one-half (2-1/2") inches diameter and smaller shall be SDR 21, Class 200 PVC solvent weld.

5. Mainline pipe size three (3") inch and larger shall be SDR 21 Class 200 PVC ring tite (gasket) pipe.

6. Fittings for PVC pipe sizes three (3") inch and larger shall be constructed of ductile iron with gasket joints with a minimum working pressure of 200 PSI, Harco or approved equal.

7. Fittings for PVC pipe sizes two and one-half (2-1/2") inches and smaller shall be ASTM D2466 Schedule 40 PVC molded fittings suitable for solvent weld.

8. All piping shall be ASTM D2241, rigid, unplastisized polyvinyl chloride, extruded from virgin parent material. Provide pipe homogeneous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles and dents.

9. Provide pipe continuously and permanently marked with manufacturer’s name or trademark, size, schedule, and type of pipe, working pressure at seventy-three (73) degrees Fahrenheit and National Sanitation Foundation (NSF) approval. Cover pipe during storage.

B. Sprinkler Equipment

1. Accepted Manufacturers

   a. Hunter

C. Sprinkler Heads – Long Range

1. The full or part-circle sprinklers shall be a gear driven rotary type. The sprinkler shall be of a pop-up design with an overall height of 8-1/2", a body diameter of 2-1/2", a cap diameter of 3-3/8" and a pop-up stroke of 4". The sprinkler shall be mounted at finish grade and shall have a 1" NPT or BSP
female threaded inlet. The sprinkler shall be capable of covering up to a 52’ radius at 60 pounds per square inch pressure with a discharge rate of 10.2 gallons per minute. Water distribution shall be via two (2) nozzles that thread into a 2” diameter nozzle turret. The dual color-coded nozzles shall elevate 4” when in operation.

2. The body and cap of the sprinkler shall be injection molded from ABS, a non-corrosive, impact-resistant, UV-resistant, heavy-duty plastic material. The cover and nozzle top shall be injection molded from Alcryl, a synthetic rubber, and be capable of providing excellent impact resistance. The sprinkler shall be available with a plastic or stainless steel riser. The sprinkler shall have a plastic filter screen sized to prevent entry of foreign material into the nozzle. All components shall be removable from the top of the sprinkler case via a snap ring retention method.

3. The sprinkler shall have a single-piece riser/body seal that regulates flutings during pop-up and retraction to clear any debris from around the riser and a heavy-duty stainless-steel spring to ensure positive retraction. Rotation shall be accomplished by a water lubricated planetary gear-drive assembly driven by a variable reversing stator that maintains a constant speed of rotation with all nozzles. The variable reversing stator shall require no adjustments when changing nozzles.

4. The sprinkler shall incorporate an anti-vandal arc memory feature that allows the nozzle to be turned beyond its watering borders without incurring any internal damage. If turned beyond its watering borders, the sprinkler shall automatically return to the previously set arc. The sprinkler shall have a standard rubber cover available in black, or lavender for effluent water use applications.

D. Remote Control Valves

1. The remote control valve body and bonnet shall be constructed of 33% glass-filled nylon (GFN) and stainless steel and have a maximum pressure rating of 220 PSI. The diaphragm shall be made of double-beaded, fabric reinforced rubber to retain flexibility and provide maximum sealing throughout its area. The diaphragm assembly shall be fully serviceable, held together with stainless-steel components and plastic components. All parts shall be serviceable from the top of the valve without removing the valve from the line. The valve may be installed at any angle without affecting valve operation. All other internal parts shall be made of plastic, brass and stainless steel to ensure corrosion resistance.

2. The valve shall have an internal manual downstream bleed to prevent flooding of the valve box and be capable of operation by hand. The valve shall have an external bleed for system flushing. The valve shall have a self-cleaning, stainless steel metering (externally removable) system. The valve
shall have a manual flow control with a hand-operated, rising-type flow-control stem with a control wheel/handle. The flow control shall be adjustable down to zero flow.

3. For 1" models, friction loss at 40 GPM shall not exceed 7.2 PSI on electric valves. For 1-1/2" models, friction loss at 100 GPM shall not exceed 14.4 PSI on electric valves. For 2" models, friction loss at 180 GPM shall not exceed 8.05 PSI on electric valves. For 3" models, friction loss at 300 GPM shall not exceed 10.1 PSI on electric valves. The burst pressure safety rating shall be 750 PSI. The valve must open or close in less than one minute at 220 PSI without water hammer.

4. The valve shall have a plastic solenoid, which is fully encapsulated and have a captured hex plunger and spring. The solenoid will have a removable retainer for servicing of the spring and plunger. The plunger shall be on a stainless-steel solenoid seat for longer life. The 24 V a.c. solenoid shall open with a 22.5 V a.c. minimum at 220 PSI. At 24 V a.c. average inrush, current shall not exceed 0.40 amps. Average holding current shall not exceed 0.20 amps.

5. The valve shall have a built-in, Schrader-type valve for attaching a pressure gauge to verify downstream pressure. The valve shall be able to field retrofit with an optional pressure-regulating module, EZRega™, which can be factory or field-installed or serviced under pressure. The valve shall have a forward-flow design to ensure more precise regulation when used with a pressure regulator.

6. Pressure Regulating Electric Models: The pressure regulator, EZRega™, shall be of dial design to permit visual setting of pressure with or without the valve being operated or the use of a pressure gauge. The regulator shall be of a screw-in type and shall regulate precisely over a 5-100 PSI range with maximum inlet pressure of 220 PSI. The regulator shall maintain the set pressure within +/- 3 PSI (with a 10-PSI differential between inlet and outlet). The valve shall be developed, manufactured, qualified and released in the USA. The valve shall come with a 5-year trade warranty.

E. Control Wire and Connections

1. Low voltage wire connectors to be made using wire nuts and 3M DBY/DBR connectors or approved equal.

2. One hundred and twenty (120) volt or heavier splices made underground to be made using wire nuts and 3M brand DBY.

3. Control wire shall be Type; UL approved for direct burial. Conductor to be single strand soft annealed copper, jacket to be PVC or polyethylene.
4. Twenty-four (24) volt control wire to be a different color for each control timer and shall be size fourteen (14) or larger. Common wire to be white in color and shall be size twelve (12) or larger. Run a minimum of one (1) common per control timer. Do not connect ground wires from different controllers.

F. Control System

1. The field satellite controller shall use modular solid-state control technology and be capable of automatic, semi-automatic and manual operations. It shall be housed in a locking, weatherproof, pedestal-type enclosure constructed of plastic or heavy-gauge painted, stainless steel with corrosion-resistant finish inside and out. Access to all wiring connections is through a locking door. Four bolts shall secure the pedestal to the concrete pad.

2. The controller shall be capable of operating with an input voltage of 115/230 V a.c. (+/- 10%), 50/60 Hz. Each station shall be capable of delivering 0.75 amperes (18 VA) at 24 V a.c. per station. Each station shall have built-in surge protection. The controller shall be capable of operating multiple stations for a total output current of 3.2 amperes (72 VA) at 24 V a.c.

3. The controller shall have three modes of operation: central, stand-alone and off. Time-of-day, day-of-week, programming and operational status shall be shown in two large LCD displays. While operating in stand-alone mode, the controller shall have a 12/24-hour real-time clock.

4. The controller shall have 16 independent irrigation programs. Each program shall have the ability to be scheduled independently in a 14-day calendar or one-to 29-day interval mode. Each program shall have 12 start times, up to three repeat cycles and a programmable soak time of zero to 59 minutes.

5. The controller shall have 16 stations minimum with the ability to run each station from one minute to eight hours and 59 minutes in one-minute increments. It shall be expandable to a maximum of 64 stations using eight-station modules. Each station may be assigned independently to any or all of the 16 irrigation programs. Station run time shall be independent for each irrigation program.

6. The controller shall have a program-adjust feature that allows the independent adjustment of each irrigation program from 10% to 250% in 1% increments. The adjustment by program may be set to OFF to prevent run time changes for programs intended for non-irrigation use. The controller shall have a global adjust feature that additionally adjusts all programs from 10% to 250% in 1% increments.

7. The controller shall have a manual start feature that allows a program to be run in normal or syringe mode. Syringe mode run time may be specified in
minutes (1 to 30) or as a percentage (10% to 99%) of normal station run time. When a program is running (automatic or manually started), the controller will display the currently running program, the currently running station and time left for the running station. The controller shall have a multi-manual cycle that allows the simultaneous operation of one to six stations with independent station run times. The multi-manual run time may be set for one to 59 minutes.

8. The controller shall use a high-energy lithium battery (not included) for real-time clock retention in the event of a power failure. The controller shall maintain the real-time clock for 90 days when the lithium battery is installed or 30 minutes of no battery is used. Program data shall be stored in non-volatile memory that will be retained faithfully for a minimum of ten years without power.

9. All electronic componentry shall be conformal coated in order to support visual diagnostics for field repair. The controller shall have a front cover lock that locks only when engaged and shall not lock automatically with each closure.

10. The controller shall not require the use of armored cable or looping communication cable.

11. The controller shall offer optional enhanced surge protection for all outputs, input power, communications and the pump and common.

12. When operating in the central mode, the controller shall be capable of two-way communications with the SitePro, Network LTC (up to 32 stations) and TouchNet for Network LTC Plus central controllers. It shall receive, store and send all commands generated by the central, including current time and day. It shall upload to the central: 1) satellite status, 2) program content and 3) failure sensing.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine final grades and installation conditions. Do not start underground sprinkler system work until finished grades are established and unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Layout and stake the location of each pipe runs and all sprinkler heads and sprinkler valves. Obtain owner’s representative’s acceptance of layout before excavating.
3.03 EXCAVATING AND BACKFILLING

A. Excavating shall be considered unclassified and shall include all materials encountered, except materials that cannot be excavated by normal mechanical means. Excavate trenches of sufficient depth and width to permit proper handling and installation of pipe and fittings. Excavate to depths required to provide two (2") inch depth of earth fill or sand bedding for piping when rock or other unsuitable bearing material is encountered.

B. All mainline and continuously pressurized pipe is to be installed using open trenches. Lateral pipe may be installed by “plowing” if soil conditions permit and soils do not contain gravel, rock, construction debris or other potentially damaging material.

C. The top ten (10") inches of backfill shall be topsoil, free of rocks, subsoil or trash. Any special soil mixture shall be replaced to the original condition it was prior to irrigation installation.

D. Fill to within six (6") inches of final grade with approved excavated or borrows fill materials free of lumps or rocks larger than two (2") inches in any dimension.

E. Provide approved fine grained earth fill or sand to a point four (4") inches above the top of pipe, where soil conditions are rocky or otherwise objectionable.

F. Fill to match adjacent grade elevation with approved earth fill material. Place and compact fill in layers not greater than eight (8") inches in depth.

3.04 UNDERGROUND PIPE

A. All mainline and continuously pressurized pipes are to be installed using open trenches.

B. Allow glued joints to set at least twenty-four (24) hours before pressure is applied to the system.

C. Store pipe such that it is protected from oil and grease and from prolonged exposure to sunlight and excessive heat.

D. Minimum depth of cover over lateral pipe shall be ten (18") inches and over mainline pipe shall be twenty-four (24") inches.

E. Install plastic pipe in accordance with manufacturer's installation instructions.

F. Where mainline pipe crosses piping related to the subgrade system drainage, the mainline piping shall go over the subgrade drainage, provided the mainline pipe is not installed with less than eighteen (18") inches of cover.
Otherwise install mainline pipe at twenty-four (24") inches buried depth, beneath drainage system.

3.05 SPRINKLER INSTALLATION

A. Install fittings and sprinkler heads in accordance with manufacturer’s instructions, except as otherwise indicated.

B. Provide all quick coupling valves and one (1") inch IPS sprinklers with three (3) elbow swing joints. Use Lasco one (1") pre-fabricated ‘O’ Ring joints as detailed on the drawings.

C. Set sprinkler heads perpendicular to finished grades, except as otherwise indicated and positioned to prevent contact with grounds maintenance equipment. Locate sprinkler heads to assure proper coverage of indicated areas. Do not exceed sprinkler head spacing distances indicated.

D. Flush piping with full head of water and install heads after hydrostatic test is completed.

3.06 VALVE INSTALLATION

A. Electric valve installation shall be as indicated on the drawings. All electrical and manual valves shall be enclosed in a minimum ten (10") inch width valve box. Add extensions as required to prevent soil settlement around the valve. Set box flush with finish grade and aligned with adjacent boxes and/or adjoining site work.

B. Install valve access boxes on a suitable base of gravel to provide a level foundation at proper grade and to provide drainage of the access box. Support box with block or notch box to protect pipe under box.

3.07 FLUSHING AND TESTING

A. The sprinkler main shall be tested under normal water pressure for a period of twelve (12) hours.

B. If leaks occur, repair and repeat the test. Give the owner’s representative twenty-four (24) hours of notice prior to testing.

C. Adjustment of the sprinkler heads and automatic equipment shall be done by the contractor upon completion of installation to provide optimum performance. The contractor shall make minor adjustment during the guarantee period.

D. After all new sprinkler piping are in place and connected for a given section and all necessary division work has been completed, and prior to the
installation of sprinkler heads, all control valves shall be opened and a full head of water used to flush out the system.

E. Testing of the system shall be performed after completion of each section or completion of the entire installation. Any necessary repairs shall be made, at the contractor’s expense, to put the system in good working order before the owner shall make final payment.

END OF SECTION
SECTION 02850

TOPSOIL

PART 1 - GENERAL

1.1 SUMMARY

The work of this section consists of manufacturing, delivering, and placing 6” of topsoil on prepared subgrade areas disturbed by construction. Topsoil, as available, may be stripped, screened, stockpiled and tested for reuse. Topsoil requirements in excess of available on-site will be imported. Both sources will be placed in compliance with this section.

1.2 RELATED SECTIONS

A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section. Related Sections include the following:

1. Section 02200 – Earthwork

2. Section 02860 – Turf

1.3 SUBMITTALS

A. In accordance with Section-01300. Submit soil analysis report for imported topsoil from the State University Agricultural Extension Service or other approved soil testing laboratory. Report shall cover soil textural classification (percentages of sand, silt, and clay) and include additive recommendations for lawn areas. Field methods of analysis are acceptable, but laboratory report is preferred.

1.4 PRODUCT HANDLING

A. Do not deliver topsoil in frozen, wet, or muddy condition.

PART 2 - MATERIALS

2.1 EXISTING TOPSOIL

A. The Contractor will be allowed to reuse existing topsoil from the Site, if the material is properly segregated from the underlying sand gravel materials below and consists of a friable loam, free-from pure clay, weeds, noxious weed seeds, sod, clods and stones larger than 1 inch, toxic substances, litter, or other deleterious material.

B. Soil Texture shall be: 20 to 40% fines (silt and clay fraction passing the 200 sieve) and 60 to 80% Sand and gravel. The maximum particle size shall be 1-inch.

C. Organic Content: 5 to 10%

Mt. Wollaston Cemetery Improvements
Quincy, MA
2016-086

TOPSOIL
02850-1
D. Additives: As required by soil analysis of Topsoil for lawn areas.

2.1 IMPORTED TOPSOIL

A. In disturbed areas where the lack of existing topsoils exist to meet final grading, the Contractor will be required to import suitable topsoil materials.

B. Friable loam, typical of fertile local topsoil; free-from pure clay, weeds, noxious weed seeds, sod, clods and stones larger than 1 inch, toxic substances, litter, or other deleterious material; having a mildly alkaline to medium acid pH between 6.0 and 7.5. Soluble salts shall not exceed 4 milli-mhos per centimeter.

C. Soil Texture: 20 to 40% fines (silt and clay fraction passing the 200 sieve) and 60 to 80% Sand and gravel. The maximum particle size shall be 1-inch.

D. Organic Content: 5 to 10%

E. Additives: As required by soil analysis of Topsoil for lawn areas.

PART 3 - EXECUTION

3.1 PLACING TOPSOIL

A. Scarify compacted subgrade to a 2-inch depth to bond topsoil to subsoil. Place topsoil to a minimum depth of 6 inches for outside disturbed areas as shown on the Drawings. Spread evenly and grade to elevations and slopes shown. Hand rake areas inaccessible to machine grading. Use all available on-site stockpiled topsoil and supplement with off-site topsoil as required, including amendments.

END OF SECTION 02920

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TOPSOIL
02850-2
SECTION 02860

TURF

PART 1 - GENERAL

1.1 SUMMARY

A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all lawn installation and fine grading work and related items as indicated on the Contract Documents and/or as specified in this Section and includes, but is not necessarily limited to, the following:

1. Seeding

2. Maintenance and protection

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

C. The following items of related work are specified and included in other Sections of the Specifications:

1. Section 02200 - Earthwork

2. Section 02850 – Topsoil

1.3 SUBMITTALS

A. At least 90 days prior to the first day of the seeding season described in this Section, submit to the Engineer proof of certification of Foreman or Crew Leader as Massachusetts Certified Landscape Professional or Massachusetts Certified Horticulturist in accordance with QUALITY ASSURANCE paragraph of this Section.

B. Submit proof of landscape contractor's experience to the Engineer in accordance with QUALITY ASSURANCE paragraph of this Section.

C. At least 30 days prior to intended use, the Contractor shall provide the following samples and submittals for approval in conformance with the requirements of Division 1 Section, SUBMITTALS. Do not order materials until Engineer's approval of samples, certifications or test results has been obtained. Delivered materials shall closely match the approved samples. Acceptance shall not constitute final acceptance. The Engineer reserves the right to reject on or after delivery any material that does not meet these Specifications.
1. Material Sampling and Testing of Loam Borrow from On-Site or Off-Site Sources shall be specified and performed under Division 2 Section 02850, TOPSOIL (Outside Disturbed Areas), of this Specification.

2. Fertilizer:
   a. Submit product literature of seeding fertilizer and certificates showing composition and analysis.
   b. Submit the purchasing receipt showing the total quantity purchased for the project prior to installation.

3. Seed: Submit a manufacturer's Certificate of Compliance to the Specifications with each shipment of each type of seed. These certificates shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates.

4. Hydroseeding: Prior to the start of hydroseeding, submit a certified statement for approval as to the number of pounds of materials to be used per 100 gallons of water.

5. Wood Cellulose Fiber Mulch: Submit 4 copies of manufacturer's literature and one material sample.

6. Limestone: Submit supplier's certification that the limestone being supplied conforms to these Specifications.

7. All additives needed to amend a specific soil in order to meet these specifications.

D. Maintenance Instructions: At the time of Acceptance, the Contractor shall submit complete maintenance instructions for turf care for the Owner's use. The instructions shall be reviewed for approval by the Engineer as a pre-condition for Acceptance.

1.4 EXAMINATION OF CONDITIONS

A. All areas to be improved shall be inspected by the Contractor before starting work and any defects such as incorrect grading, or drainage problems shall be reported to the Engineer prior to beginning this work. The commencement of work by the Contractor shall indicate his acceptance of the areas to be improved, and he shall assume full responsibility for the work of this Division 2 Section, TURF.

B. The Contractor shall be solely responsible for judging the full extent of work requirements involved.

1.5 QUALITY ASSURANCE

A. Qualification of Landscape Contractor: The work of this Division 2 Section, TURF, shall be performed by a landscape contracting firm which has successfully installed work of a similar quality, schedule requirement, and construction detailing with a minimum of five years experience. Proof of this experience shall be submitted per SUBMITTALS
paragraph of this Division 2 Section, TURF.

B. Qualification of Foreman or Crew Leader: All work of seeding shall be supervised by a foreman or crew leader who is a certified landscape professional or a certified horticulturist.

1. Landscape professional shall be a Massachusetts Certified Landscape Professional certified by the Associated Landscape Contractors of Massachusetts.

2. Horticulturist shall be a Massachusetts Certified Horticulturist as certified by the Massachusetts Nursery and Landscape Association.

3. Certification shall be current. Proof of certification shall be submitted per SUBMITTALS paragraph of this Division 2 Section, TURF.

C. The ratio of laborers to certified landscape professionals or certified horticulturist shall not exceed twelve to one. Certified Landscape Professional or Certified Horticulturist shall be on the project site throughout the day to day performance of the work described in this Division 2 Section, TURF.

PART 2 - PRODUCTS

2.1 LOAM

A. Loam borrow shall be specified, provided, and installed under Division 2 Section 02850, TOPSOIL, of this Specification.

2.2 SOIL ADDITIVES

A. Soil additives shall be specified and provided under Division 2 Section 02850, TOPSOIL, except for additional applications of fertilizer that shall be specified, provided and paid for under this Division 2 Section, TURF, based upon recommendations from soil analysis and testing as specified.

2.3 SEED

A. Seed mixture shall be fresh, clean, new crop seed. Grass shall be of the previous year's crop and in no case shall the weed seed content exceed 0.25% by weight. The seed shall be furnished and delivered in the proportion specified below in new, clean, sealed and properly labeled containers. All seed shall comply with State and Federal seed laws. Submit manufacturer's Certificates of Compliance. Seed that has become wet, moldy or otherwise damaged shall not be acceptable. Tall fescue and ryegrass shall contain **Acremonium** endophytes. Seed containing endophyte must be kept cool and dry at all times; do not stockpile in the sun.
1. Seed Mixture Composition for disturbed areas:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Proportion By Weight</th>
<th>Germination Minimum</th>
<th>Purity Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall Fescue (3 varieties minimum)</td>
<td>80%</td>
<td>85%</td>
<td>95%</td>
</tr>
<tr>
<td>Kentucky Bluegrass</td>
<td>10%</td>
<td>85%</td>
<td>95%</td>
</tr>
<tr>
<td>Perennial Rye</td>
<td>10%</td>
<td>90%</td>
<td>95%</td>
</tr>
</tbody>
</table>

a. All grass varieties shall be within the top 50 percent of varieties tested in National Turfgrass Evaluation Program, or currently recommended as low maintenance varieties by University of Massachusetts or the University of Rhode Island.

b. Seeding rate shall be 6 pounds per 1,000 square feet.

B. Seed may be mixed by an approved method on the site or may be mixed by a dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers that shall bear the dealer's guaranteed analysis. If seed is mixed by a dealer then the Contractor shall furnish the Engineer the dealer's guaranteed statement of the composition of the mixture.

2.4 FERTILIZERS

A. Fertilizer shall be a commercial product complying with the State and United States fertilizer laws. Deliver to the site in the original unopened containers that shall bear the manufacturer's certificate of compliance covering analysis. Fertilizer shall contain not less than the percentages of weight of ingredients as recommended by the soil analysis specified and performed and under Division 2 Section, TOPSOIL, of this Specification.

2.5 LIMESTONE

A. Ground limestone for adjustment of loam borrow pH shall contain not less than 85 percent of total carbonates and shall be ground to such fineness that 40 percent will pass through 100 mesh sieve and 95 percent will pass through a 20 mesh sieve. Contractor shall be aware of loam borrow pH and the amount of lime needed to adjust pH to specification in accordance with testing lab recommendations.

2.6 WOOD CELLULOSE FIBER MULCH

A. Mulch to cover hydroseeded areas with slopes less than 3 to 1 shall be fiber processed from whole wood chips and clean recycled newsprint in a 1:1 proportion manufactured specifically for standard hydraulic mulching equipment. Fiber shall not be produced from recycled material such as sawdust, paper, or cardboard.

B. 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 water holding capacity of not less than 900 grams water per 100 grams fiber.
C. The mulch shall be of such character that the fiber will be dispersed into a uniform slurry when mixed with water. It shall be nontoxic to plant life or animal life.

D. The mulch shall contain a non-petroleum based organic tackifier and a green dye to allow for easy visual metering during application but shall be non-injurious to plant growth.

2.7 HERBICIDES, CHEMICALS AND INSECTICIDES

A. Provide chemicals and insecticides as needed for fungus or pest control. All chemicals and insecticides shall be approved by the Massachusetts Department of Food and Agriculture for the intended uses and application rates.

B. Provide post-emergent crab grass control throughout the maintenance period to ensure a germinated and mown lawn free of crab grass.

2.8 WATER

A. The Contractor may use water provided by the Town upon request and approval of the Water Department, if available. The Contractor shall responsible to furnish his own supply of water to the site at no additional cost to the Owner. If Town water is not available, the Contractor shall be responsible to furnish adequate supplies at his own cost. All work injured or damaged due to the lack of water or use of too much water, shall be the Contractor’s responsibility to correct. Water shall be free from impurities injurious to vegetation. The Contractor’s use of Town water shall be at his own risk.

PART 3 - EXECUTION

3.1 FILLING AND COMPACTION

A. Filling and compaction of loam shall be specified and performed under Division 2 Section, TOPSOIL, of this Specification.

3.2 FINE GRADING

A. Fine grading shall be specified and performed under the work of the Division 2 Sections, Earthwork, Rough Grading and Topsoil, of this Specification.

3.3 SEEDING

A. Contractor shall obtain Engineer’s written approval of fine grading and bed preparation before doing any seeding.

B. Limit of proposed grading shall be limit of seeding unless otherwise indicated on the Contract Documents. All lawn areas disturbed outside the limit of seeding shall be prepared and seeded as specified herein at no additional cost.

C. The season for seeding shall be from April 1 to May 31 and from August 15 to September
30. The actual planting of seed shall be done, however, only during periods within this season which are normal for such work as determined by weather conditions and by accepted practice in this locality. To prevent loss of soil via water and wind erosion and to prevent the flow of sediment, fertilizer, and pesticides onto roadways, sidewalks, and into catch basins, seed loam areas within 5 Days of spreading the loam.

D. Seed only when the bed is in a friable condition, not muddy or hard.

E. Seeding of Disturbed areas shall be by Hydroseeding Method specified as follows:

1. Prior to the start of work, furnish a certified statement as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of hydroseeding that can be covered with the quantity of solution in the hydroseeder.

2. Hydroseed with wood cellulose fiber mulch at a rate as designated above in Part 2 – PRODUCTS.

3. For the hydroseeding process, a mobile tank with a capacity of at least 500 gallons shall be filled with water and the mixture noted above in the specified proportions. The resulting slurry shall be thoroughly mixed by means of positive agitation in the tank. Apply the slurry by a centrifugal pump using the hose application techniques from the mobile tank. Only hose application shall be permitted. No time shall the mobile tank or tank truck be allowed onto the prepared hydroseed bed. The hose shall be equipped with a nozzle of a proper design to ensure even distribution of the hydroseeding slurry over the area to be hydroseeded and shall be operated by a person thoroughly familiar with this type of seeding operation.

4. Contractor shall obtain Engineer’s written approval of fine grading and bed preparation before doing any hydroseeding.

5. Limit of work shall be limit of hydroseeding unless otherwise indicated on the Contract Documents. All lawn areas disturbed outside the limit of hydroseeding shall be hydroseeded.

6. Seed only when the bed is in a friable condition, not muddy or hard. Construction methods shall conform to hydraulic method requirements specified in the Standard Specification.

7. Hydroseeding shall be a two-step process.

   a. Step one shall consist of spreading 100 percent of the required seed uniformly over the prepared loam bed so that the seed comes into direct contact with the soil. To mark the progress of the hydroseeding operation the Contractor may add 10 percent of the wood cellulose fiber mulch to the slurry.

   b. Step two shall consist of a separate application of wood cellulose fiber mulch immediately following the first step of hydroseeding noted above. Apply the wood cellulose fiber mulch at a rate of 2,000 pounds per acre.
3.4 TURF MAINTENANCE

A. Maintenance shall begin immediately after any area is seeded or sodded and shall continue for a 60 day active growing period for seeded areas or until Final Acceptance, whichever is longer following the completion of all lawn construction work, and until final acceptance of the project. In the event that seeding operations are completed too late in the Fall for adequate germination and growth of grass, then maintenance shall continue into the following Spring for the minimum 60 Day period and including the One (1) Year Maintenance Period.

B. Maintenance shall include re-seeding, two (2) mowings, watering, weeding, fertilizing a minimum of two times in addition to the fertilizer incorporated by harrowing into the spread loam, and resetting and straightening of protective barriers. Lawn work maintenance shall also include chemical treatments as required for fungus and/or pest control.

C. During the maintenance period, any decline in the condition of turf areas shall require immediate action to identify potential problems and to undertake corrective measures.

D. Watering shall be done in a manner that 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.

1. The Contractor shall provide all labor and arrange for all watering necessary to establish an acceptable lawn. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary to maintain moist soil to a depth of at least two (2) inches for seeded areas and four (4) inches for sodded areas. At no time shall a tank truck be allowed on the reseeded/re-sodded beds.

2. Watering shall be done in a manner that 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 water to the required soil depths each 8-hour period.

E. After the grass in seeded areas has germinated, reseed all areas and parts of areas that fail to show a uniform stand of grass. Reseed such areas and parts of areas repeatedly until all areas are covered with a satisfactory growth of grass with no less than 20 grass shoots per square inch and 2880 grass shoots per square foot. Reseeding together with necessary grading, fertilizing, and trimming shall be done at the Contractor's expense.

F. Mowing and Edging:

1. The Contractor shall keep lawn areas mowed until Acceptance of the contract by cutting to a height of two (2) inches when growth reaches three (3) inches or as directed by the Engineer.
2. At each mowing, all edges of walks, drives, plant beds and other border conditions shall be edge trimmed by hand or machine to produce straight and uniform edge conditions.

3. Remove and discard from paved areas only clippings and debris generated by each mowing and edging operation legally off-site. Engineer, if practical and aesthetic, may allow sweeping (not blowing) clippings back into grass. Mowers shall be equipped with mulching blades. Do not remove from grass areas any clippings that have been generated by mowing operations. Do not mow grass when wet.

G. Fertilizing for seeded lawns: The first application of fertilizer is specified, provided, performed and paid for under the Division 2 Section, TOPSOIL. A second application of fertilizer shall be applied to seeded areas at the time of the first mowing and shall be performed and paid for under Division 2 Section, TURF. This second application shall be applied at a rate that ensures that one-half pound of nitrogen is applied per 1,000 square feet. Phosphorus and potassium shall be applied proportionally in accordance with the recommendations of the soil tests and the quantities previously integrated into the soil during the first application. A third application of nitrogen fertilizer shall be applied to seeded areas approximately two months after the second application and shall be paid for under this Division 2 Section, TURF. This third application shall correspond to the following application rates dependent upon the month of application:

1. May 1-15: Apply 1.0 pound of nitrogen per 1,000 square feet.

2. June 15-30: Apply 1.0 pound of nitrogen per 1,000 square feet.

3. August 15 through September 15: Apply 1.0 pound of nitrogen per 1,000 square feet.

4. November 1-15: Apply 1.5 pounds of nitrogen per 1,000 square feet.

**Nitrogen fertilizer shall be composed of 50 percent slowly soluble or slow release nitrogen fertilizer.

3.5 APPLYING LIMESTONE

A. The Contractor shall return to the site at the beginning of the next seeding season as specified above and spread limestone across all lawn areas installed under this Contract. The work of liming the fields shall be as specified under Division 2 Section, TOPSOIL, of this Specification, and performed under Division 2 Section, TURF. Limestone shall be spread at rates determined by the soil tests specified.

3.6 ACCEPTANCE

A. Following the minimum required maintenance periods for lawn construction, the Contractor shall request the Engineer in writing for a formal inspection of the completed work. Request for inspection shall be received by the Engineer at least 10 Days before anticipated date of inspection.

B. Acceptance Requirements:
1. At the end of the maintenance period, seeded areas shall have a close stand of grass as defined above with no weeds present and no bare spots greater than 3 inches in diameter over greater than 5 percent of the overall seeded area. At least 90 percent of the grass established shall be permanent grass species. If seeded areas are deficient, the Contractor's responsibility for maintenance of all seeded areas shall be extended until deficiencies are corrected. Seeded areas to be corrected shall be prepared and reseeded in accordance with the requirements of this Division 2 Section, TURF.

C. Furnish full and complete written instructions for maintenance of the lawns to the Owner at the time of acceptance in conformance with Submittals requirements.

D. Engineer's inspection shall determine whether maintenance shall continue in any part.

3.7 CLEAN UP

A. Absolutely no debris may be left on the site. Excavated material shall be removed as directed. Repair any damage to site or structures to restore them to their original condition, as directed by the Engineer, at no cost to the Owner.

END OF SECTION 02945
SECTION 02901
MISCELLANEOUS WORK AND CLEANUP

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to do the miscellaneous work not specified in other sections but obviously necessary for the proper completion of the work as shown on the Drawings.

B. When applicable the Contractor shall perform the work in accordance with other sections of this Specification. When no applicable specification exists the Contractor shall perform the work in accordance with the best modern practice and/or as directed by the Engineer.

C. The work of this Section includes, but is not limited to, the following:

1. Installing and maintaining construction warning signs.

2. Crossing and relocating existing utilities.

3. Restoring of roadways.

4. Cleaning up.

5. Incidental work.

6. Job photographs, if required.

7. Protection and/or removal and reinstallation of existing elements.

8. Raking and re-seeding of grassed areas disturbed during construction and/or dewatering activities, including silt basin/dewatering activity areas.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Materials required for this Section shall be the same quality of materials that are to be restored. Where possible, the Contractor may re-use existing materials that are removed.
PART 3 – EXECUTION

3.1 INSTALLING AND MAINTAINING CONSTRUCTION WARNING SIGNS

A. Construction work zone traffic control shall be the contractor’s responsibility. Generally, conformance with Part VI of the Manual of Uniform Traffic Control Devices (MUTCD), latest edition, “Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility, and Incident Management Operations”, will be considered to meet this requirement.

3.2 CROSSING AND RELOCATING EXISTING UTILITIES

A. This Item includes any extra work required in crossing culverts, water courses, including brooks and drainage ditches, storm drains, gas mains, water mains, electric, telephone, gas and water services and other utilities. This work shall include but is not limited to the following: bracing, hand excavation and backfill (except screened gravel) and any other work required for crossing the utility or obstruction not included for payment in other items of this specification. Notification of Utility Companies shall be required prior to work being done.

B. In locations where existing utilities cannot be crossed without interfering with the construction of the work as shown on the Drawings, the Contractor shall remove and relocate the utility as directed by the Engineer or cooperate with the Utility Companies concerned if they relocate their own utility.

C. At pipe crossings and where designated by the Engineer, the Contractor shall furnish and place screened gravel bedding so that the existing utility or pipe is firmly supported for its entire exposed length. The bedding shall extend to the mid-diameter of the pipe crossed.

3.3 RESTORING OF ROADWAYS

A. Existing public and private roadways disturbed by the construction shall be replaced. Paved drives shall be repaved to the limits and thickness existing prior to construction. Gravel drives shall be replaced and regraded.

B. Existing public and private to sidewalks to remain and that are disturbed by the construction shall be replaced with sidewalks of equal quality and dimension. In general, sidewalks shall be 2-1/2 inches thick after rolling and compacting and the material shall be top course bituminous asphalt.

3.4 CLEANING UP

A. The Contractor shall remove all construction material, excess excavation, buildings, equipment and other debris remaining on the job as a result of construction operations and shall restore the site of the work to a neat and orderly condition. Any materials and sand or concrete materials shall be cleaned out of the manholes and catch basins. Haybales and siltence as well as any silt and debris retained by same shall be removed.
3.5 INCIDENTAL WORK

A. Do all incidental work not otherwise specified, but obviously necessary to the proper completion of the Contract as specified and as shown on the Drawings.

3.6 PHOTOGRAPHS OF PROJECT

A. Prior to work, the Contractor may document existing conditions using construction photographs. Photographs for this purpose shall be at the Contractors’ expense.

3.7 RESTORATION AND REPLACEMENT OF ELEMENTS

A. Existing signs, lamp posts, fence posts, fencing and other miscellaneous elements which may be damaged by the Contractor or removed by the Contractor during the course of construction shall be reinstalled in a vertical position at the same location from which they were removed. Damaged items shall be replaced with an item equal to or better than the damaged items. A concrete anchor shall be provided as necessary, at no additional cost, to ensure a rigid alignment. Care shall be exercised in the reinstallation of all items to prevent damage to the new construction.

3.8 RAKING AND RE-SEEDING

A. Grass and landscaped areas disturbed by the Contractor shall be raked and replenished with loam if required. Areas shall be re-seeded as required.

END OF SECTION 02901
DIVISION 3 – BIDDING AND CONTRACT REQUIREMENTS

03300 Cast-In-Place Concrete
CAST-IN-PLACE CONCRETE

SECTION 03300

PART 1 - GENERAL

1.1 SUMMARY

In general, the Contractor shall supply all labor, equipment, temporary protection, tools and appliances necessary for the proper completion of the work as required in the specifications and in accordance with good construction practice. Refer to the Contract Drawings for locations of work included in the contract.

A. Work Included - The work under this section generally includes the following:

1. Concrete Thrust Blocks
2. Water Fountain Post Foundation

1.2 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this Section, and:

1. Section 02200 – Earthwork
2. Section 02660 – Water Systems

1.3 SUBMITTALS

A. In addition to Product Data, submit design mixes for each concrete mix.

1.4 QUALITY ASSURANCE


1. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete Materials: As follows:

1. Portland Cement: ASTM C 150, Type I or II.
2. Aggregate: ASTM C 33, uniformly graded, from a single source.
5. Water-Reducing Admixture: ASTM C 494, Type A.
6. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
7. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
8. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

B. Curing Materials: As follows:

2. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
4. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
   a. 2 coats Sonneborn "Kure-N-Seal" or equal.

2.2 CONCRETE MIXES

A. Concrete Mixes, General: Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, with the following properties:

B. Thrust Blocks and Post Foundation

2. Slump: 4 inches.
3. Air Content: 4.5 to 7.0 percent.

C. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.
PART 3 – EXECUTION

3.1 FORMWORK

A. Design, construct, 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 concrete structure can support such loads.

B. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

C. Comply with ACI 318, ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and reshoring.

D. Vapor Retarder: Place, protect, and repair vapor-retarder sheets according to ASTM E 1643.

3.2 CONCRETE PLACEMENT

A. Deposit concrete continuously and avoid segregation. Deposit concrete in forms in horizontal layers no deeper than 24 inches, avoiding cold joints.

1. Consolidate concrete with mechanical vibrating equipment.
2. Screed and initial-float concrete floors and slabs using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
3. Comply with ACI 306.1 for cold-weather concrete placement.
4. Place concrete according to recommendations in ACI 305R when hot-weather conditions exist.

3.3 FINISHING

A. Finish formed surfaces as follows:

1. Apply rough-formed finish, defined in ACI 301, to concrete surfaces indicated or not exposed to public view.

3.4 CONCRETE PROTECTION AND CURING

A. Concrete Protection and Curing: Protect concrete from excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

1. Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause excessive moisture loss.
2. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
3. Cure formed and unformed concrete for at least seven days by moisture curing, moisture-retaining-cover curing, or curing compound.
4. Cure and seal floors and slabs with a curing and sealing compound according to manufacturer's written instructions.

3.5 QUALITY CONTROL

A. Testing Agency: The Contractor will engage a qualified independent testing and inspecting agency subject to Owner approval to sample materials, perform tests, and submit test reports during concrete placement. Tests shall be performed according to ACI 301.

B. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

END OF SECTION
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

AWARDING AUTHORITY: City of Quincy
CONTRACT NUMBER: P0917015
DESCRIPTION OF WORK: MT. WOLLASTON CEMETERY - Demo existing h2o system, 61 h2o fountains, sidewalks & limited asphalt; install 14,706 ft. of small diameter high pres. plastic h2o pipe, 2 meter pits 74 gran h2o fountain
JOB LOCATION: 20 SEA STREET, QUINCY, MA

City/Town: QUINCY

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

Issue Date: 04/27/2017 Wage Request Number: 20170427-077
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**Issue Date:** 04/27/2017  
**Wage Request Number:** 20170427-077  
**Page 2 of 33**
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**Notes:**

Apprentice to Journeyworker Ratio: 1:5

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### Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Quincy

#### Effective Date - 03/01/2017

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#### Notes:

Apprentice to Journeyworker Ratio: 1:5

**BULLDOZER/GRADER/SCRAPER**

*OPERATING ENGINEERS LOCAL 4*

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06/01/2017  $45.93  $10.00  $15.25  $0.00  $71.18
12/01/2017  $46.92  $10.00  $15.25  $0.00  $72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

**CAISSON & UNDERPINNING BOTTOM MAN**

*LABORERS - FOUNDATION  AND MARINE*

12/01/2016  $37.45  $7.60  $14.35  $0.00  $59.40

For apprentice rates see "Apprentice- LABORER"

**CAISSON & UNDERPINNING LABORER**

*LABORERS - FOUNDATION AND MARINE*

12/01/2016  $36.30  $7.60  $14.35  $0.00  $58.25

For apprentice rates see "Apprentice- LABORER"

**CAISSON & UNDERPINNING TOP MAN**

*LABORERS - FOUNDATION AND MARINE*

12/01/2016  $36.30  $7.60  $14.35  $0.00  $58.25

For apprentice rates see "Apprentice- LABORER"

**CARBIDE CORE DRILL OPERATOR**

*LABORERS - ZONE 1*

12/01/2016  $36.60  $7.60  $14.15  $0.00  $58.35
06/01/2017  $37.60  $7.60  $14.15  $0.00  $59.35
12/01/2017  $38.45  $7.60  $14.15  $0.00  $60.20
06/01/2018  $39.40  $7.60  $14.15  $0.00  $61.15
12/01/2018  $40.35  $7.60  $14.15  $0.00  $62.10
06/01/2019  $41.35  $7.60  $14.15  $0.00  $63.10
12/01/2019  $42.35  $7.60  $14.15  $0.00  $64.10

For apprentice rates see "Apprentice- LABORER"

**CARPENTER**

*CARPENTERS-ZONE 2 (Eastern Massachusetts)*

03/01/2017  $38.77  $9.90  $17.00  $0.00  $65.67
09/01/2017  $39.78  $9.90  $17.00  $0.00  $66.68
03/01/2018  $40.78  $9.90  $17.00  $0.00  $67.68
09/01/2018  $41.82  $9.90  $17.00  $0.00  $68.72
03/01/2019  $42.85  $9.90  $17.00  $0.00  $69.75
### Apprentice - CARPENTER - Zone 2 Eastern MA

**Effective Date** - 03/01/2017

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**Notes:**

Apprentice to Journeyworker Ratio: 1:5

**CEMENT MASONRY/PLASTERING**

*BRICKLAYERS LOCAL 3 (QUINCY)*

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**Issue Date:** 04/27/2017  **Wage Request Number:** 20170427-077  **Page 5 of 33**
### Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Quincy)

**Effective Date - 01/01/2017**

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**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 1

- 12/01/2016: $36.60, $7.60, $14.15, $0.00, $58.35
- 06/01/2017: $37.60, $7.60, $14.15, $0.00, $59.35
- 12/01/2017: $38.45, $7.60, $14.15, $0.00, $60.20
- 06/01/2018: $39.40, $7.60, $14.15, $0.00, $61.15
- 12/01/2018: $40.35, $7.60, $14.15, $0.00, $62.10
- 06/01/2019: $41.35, $7.60, $14.15, $0.00, $63.10
- 12/01/2019: $42.35, $7.60, $14.15, $0.00, $64.10

For apprentice rates see "Apprentice-LABORER"

#### CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES
Operating Engineers Local 4

- 12/01/2016: $46.38, $10.00, $15.25, $0.00, $71.63
- 06/01/2017: $47.38, $10.00, $15.25, $0.00, $72.63
- 12/01/2017: $48.38, $10.00, $15.25, $0.00, $73.63

For apprentice rates see "Apprentice-OPERATING ENGINEERS"

#### COMPRESSOR OPERATOR
Operating Engineers Local 4

- 12/01/2016: $31.17, $10.00, $15.25, $0.00, $56.42
- 06/01/2017: $31.86, $10.00, $15.25, $0.00, $57.11
- 12/01/2017: $32.55, $10.00, $15.25, $0.00, $57.80

For apprentice rates see "Apprentice-OPERATING ENGINEERS"

#### DELEADER (BRIDGE)
Painters Local 35 - Zone 2

- 01/01/2017: $51.41, $7.85, $16.10, $0.00, $75.36
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**Notes:**
- Steps are 750 hrs.

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**DEMO: ADZEMAN**
LABORERS - ZONE 1

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For apprentice rates see "Apprentice - LABORER"

**DEMO: BACKHOE/LOADER/HAMMER OPERATOR**
LABORERS - ZONE 1

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For apprentice rates see "Apprentice - LABORER"

**DEMO: BURNERS**
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**Apprentice - ELECTRICIAN - Local 103**

**Effective Date - 03/01/2017**

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**Effective Date - 09/01/2017**

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**Notes:**
- App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80
- Apprentice to Journeyworker Ratio: 2:3**

**ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 4**

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

Apprentice to Journeyworker Ratio: 1:1

ELEVATOR CONSTRUCTOR HELPER
ELEVATOR CONSTRUCTORS LOCAL 4
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR
LABORERS - ZONE 1

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For apprentice rates see "Apprentice - LABORER"

FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY
OPERATING ENGINEERS LOCAL 4

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For apprentice rates see "Apprentice - OPERATING ENGINEERS"

FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY
OPERATING ENGINEERS LOCAL 4

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For apprentice rates see "Apprentice - OPERATING ENGINEERS"

FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY
OPERATING ENGINEERS LOCAL 4

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For apprentice rates see "Apprentice - OPERATING ENGINEERS"

FIRE ALARM INSTALLER
ELECTRICIANS LOCAL 103

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<td>Health</td>
<td>Pension</td>
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<td>$13.00</td>
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For apprentice rates see "Apprentice - TELECOMMUNICATIONS TECHNICIAN"

| FIREMAN (ASST. ENGINEER) OPERATING ENGINEERS LOCAL 4 | 12/01/2016 | $37.65 | $10.00 | $15.25 | $0.00 | $62.90 |
| | 06/01/2017 | $38.49 | $10.00 | $15.25 | $0.00 | $63.74 |
| | 12/01/2017 | $39.32 | $10.00 | $15.25 | $0.00 | $64.57 |

For apprentice rates see "Apprentice - OPERATING ENGINEERS"

| FLAGGER & SIGNALER LABORERS - ZONE 1 | 12/01/2016 | $20.50 | $7.60 | $14.15 | $0.00 | $42.25 |

For apprentice rates see "Apprentice - LABORER"

| FLOORCOVERER FLOORCOVERERS LOCAL 2168 ZONE 1 | 03/01/2016 | $42.13 | $9.80 | $17.62 | $0.00 | $69.55 |

**Apprentice - FLOORCOVERER - Local 2168 Zone 1**

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<td>2</td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
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</table>

**Notes:** Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

| FORK LIFT/CHERRY PICKER OPERATING ENGINEERS LOCAL 4 | 12/01/2016 | $45.38 | $10.00 | $15.25 | $0.00 | $70.63 |
| | 06/01/2017 | $46.38 | $10.00 | $15.25 | $0.00 | $71.63 |
| | 12/01/2017 | $47.38 | $10.00 | $15.25 | $0.00 | $72.63 |

For apprentice rates see "Apprentice - OPERATING ENGINEERS"

| GENERATOR/LIGHTING PLANT/HEATERS OPERATING ENGINEERS LOCAL 4 | 12/01/2016 | $31.17 | $10.00 | $15.25 | $0.00 | $56.42 |
| | 06/01/2017 | $31.86 | $10.00 | $15.25 | $0.00 | $57.11 |
| | 12/01/2017 | $32.55 | $10.00 | $15.25 | $0.00 | $57.80 |

For apprentice rates see "Apprentice - OPERATING ENGINEERS"

| GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) GLAZIERS LOCAL 33 (ZONE 2) | 01/01/2017 | $40.91 | $7.85 | $16.10 | $0.00 | $64.86 |

**Issue Date:** 04/27/2017  **Wage Request Number:** 20170427-077  **Page 11 of 33**
### Apprentice - GLAZIER - Local 35 Zone 2

#### Effective Date - 01/01/2017

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<th>Supplemental</th>
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**Notes:**
Steps are 750 hrs.

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### HOISTING ENGINEER/CRANES/GRADALLS

**Operating Engineers Local 4**

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## Classification

### Apprentice - OPERATING ENGINEERS - Local 4

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### Effective Date - 06/01/2017

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### Notes:

Apprentice to Journeyworker Ratio: 1:6

**HVAC (DUCTWORK)
SHEETMETAL WORKERS LOCAL 17 - A**

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For apprentice rates see "Apprentice - SHEET METAL WORKER"

**HVAC (ELECTRICAL CONTROLS)
ELECTRICIANS LOCAL 103**

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For apprentice rates see "Apprentice - ELECTRICIAN"

**HVAC (TESTING AND BALANCING - AIR)
SHEETMETAL WORKERS LOCAL 17 - A**

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For apprentice rates see "Apprentice - SHEET METAL WORKER"

**HVAC (TESTING AND BALANCING - WATER)
PIPE FITTERS LOCAL 337**

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For apprentice rates see "Apprentice - PIPE FITTER" or "PLUMBER/PIPE FITTER"

**HVAC MECHANIC
PIPE FITTERS LOCAL 337**

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<th>Health</th>
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**Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston**

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**Notes:**
- Steps are 1 year
- Apprentice to Journeyworker Ratio: 1:4

**IRONWORKER/WELDER**

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## Apprentice - IRONWORKER - Local 7 Boston

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### Notes:
** Structural 1:6; Ornamental 1:4

### Apprentice to Journeyworker Ratio:**

#### JACKHAMMER & PAVING BREAKER OPERATOR

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For apprentice rates see "Apprentice- LABORER"

#### LABORER

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[Notes:]

Apprentice to Journeyworker Ratio: 1:5

LABORER: CARPENTER TENDER
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For apprentice rates see "Apprentice - LABORER"

LABORER: CEMENT FINISHER TENDER
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For apprentice rates see "Apprentice - LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER
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**Notes:**

Apprentice to Journeyworker Ratio: 1:3

MARBLE MASON, TILELAYER & TERRAZZO MECH
BROCKLAYERS LOCAL 3 - MARBLE & TILE

02/01/2017 $50.80 $10.75 $19.22 $0.00 $80.77

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**Notes:**

Apprentice to Journeyworker Ratio: 1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES)
OPERATING ENGINEERS LOCAL 4

12/01/2016 $44.94 $10.00 $15.25 $0.00 $70.19
06/01/2017 $45.93 $10.00 $15.25 $0.00 $71.18
12/01/2017 $46.92 $10.00 $15.25 $0.00 $72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE
OPERATING ENGINEERS LOCAL 4

12/01/2016 $44.94 $10.00 $15.25 $0.00 $70.19
06/01/2017 $45.93 $10.00 $15.25 $0.00 $71.18
12/01/2017 $46.92 $10.00 $15.25 $0.00 $72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 1)
MILLWRIGHTS LOCAL 1121 - Zone 1

04/01/2017 $38.62 $9.90 $18.50 $0.00 $67.02
10/01/2017 $39.52 $9.90 $18.50 $0.00 $67.92
04/01/2018 $40.42 $9.90 $18.50 $0.00 $68.82
10/01/2018 $41.32 $9.90 $18.50 $0.00 $69.72
04/01/2019 $42.22 $9.90 $18.50 $0.00 $70.62

Issue Date: 04/27/2017 Wage Request Number: 20170427-077
## Apprentice - MILLWRIGHT - Local 1121 Zone 1

### Effective Date - 04/01/2017

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### Effective Date - 10/01/2017

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**Notes:**
- Steps are 2,000 hours

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

### MORTAR MIXER

**LABORERS - ZONE 1**

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For apprentice rates see "Apprentice - LABORER"

### OILER (OTHER THAN TRUCK CRANES, GRADALLS)

**OPERATING ENGINEERS LOCAL 4**

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For apprentice rates see "Apprentice - OPERATING ENGINEERS"

### OILER (TRUCK CRANES, GRADALLS)

**OPERATING ENGINEERS LOCAL 4**

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<th>Date</th>
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For apprentice rates see "Apprentice - OPERATING ENGINEERS"

### OTHER POWER DRIVEN EQUIPMENT - CLASS II

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For apprentice rates see "Apprentice - OPERATING ENGINEERS"

### PAINTER (BRIDGES/TANKS)

**PAINTERS LOCAL 35 - ZONE 2**

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

**Effective Date:** 01/01/2017

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**Notes:**
Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, NEW) * 01/01/2017 $42.31 $7.85 $16.10 $0.00 $66.26

* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTER Local 35 - Zone 2

---

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

**Effective Date:** 01/01/2017

<table>
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**Notes:**
Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, REPAINT) 01/01/2017 $40.37 $7.85 $16.10 $0.00 $64.32

PAINTER Local 35 - Zone 2

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

#### Effective Date - 01/01/2017

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**Notes:**
- Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

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#### PAINTER (TRAFFIC MARKINGS)

**LABORERS - ZONE 1**

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For Apprentice rates see "Apprentice - LABORER"

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#### PAINTER / TAPER (BRUSH, NEW) *

*If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2*

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### Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

#### Effective Date - 01/01/2017

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**Notes:**
- Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

---

**Issue Date:** 04/27/2017  **Wage Request Number:** 20170427-077 **Page 21 of 33**
<table>
<thead>
<tr>
<th>Classification</th>
<th>Effective Date</th>
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<th>Health</th>
<th>Pension</th>
<th>Supplemental Unemployment</th>
<th>Total Rate</th>
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### Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

**Effective Date:** 01/01/2017

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**Notes:**
- Steps are 750 hrs.

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

### PANEL & PICKUP TRUCKS DRIVER

**TEAMSTERS JOINT COUNCIL NO. 10 ZONE A**

**Effective Date:** 12/01/2016

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### PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)

**PILE DRIVER LOCAL 56 (ZONE 1)**

For apprentice rates see "Apprentice - PILE DRIVER"

**Effective Date:** 08/01/2015

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### PILE DRIVER

**PILE DRIVER LOCAL 56 (ZONE 1)**

**Effective Date:** 08/01/2015

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<th>Supplemental Unemployment</th>
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**Notes:**

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

### PIPEFITTER & STEAMFITTER

**PIPEFITTERS LOCAL 537**

**Effective Date:** 03/01/2017

<table>
<thead>
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<th>Apprentice Base Wage</th>
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<th>Pension</th>
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**Issue Date:** 04/27/2017  **Wage Request Number:** 20170427-077  **Page 22 of 33**
### Apprentice - PIPEFITTER - Local 537

**Effective Date - 03/01/2017**

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**Notes:**

- **1:3; 3:15; 1:10 thereafter / Steps are 1 yr.**

### Apprentice to Journeyworker Ratio:**

**PIPELAYER**  
LABORERS - ZONE 1

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<th>Pension</th>
<th>Supplemental Unemployment</th>
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For apprentice rates see "Apprentice- LABORER"  

### PLUMBERS & GASFITTERS

**PLUMBERS & GASFITTERS LOCAL 13**

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### Apprentice - PLUMBER/GASFITTER - Local 12

**Effective Date - 03/01/2017**

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**Notes:**

- **1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr**
- Step4 with lic$58.50 Step5 with lic$65.36

### Apprentice to Journeyworker Ratio:**

**PNEUMATIC CONTROLS (TEMP.)**  
PIPEFITTERS LOCAL 537

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For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"
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As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.
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**Notes:**

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

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**For apprentice rates see "Apprentice-LABORER"**

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**For apprentice rates see "Apprentice-OPERATING ENGINEERS"**

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Notes: **1-1.5, 2-6-10, the 1:10; Reroofing: 1:4, then 1:1**
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
(Hot Pitch Mechanics' receive $1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

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For apprentice rates see "Apprentice - ROOFER"

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## Apprentice - SHEET METAL WORKER - Local 17-A

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**Effective Date - 08/01/2017**

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### Notes:
- Steps are 6 mos.

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

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**PAINTERS LOCAL 35 - ZONE 2**

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**Issue Date:** 04/27/2017  
**Wage Request Number:** 20170427-077  
**Page 27 of 33**
### Apprentice - SIGN ERECTOR - Local 35 Zone 2

**Effective Date:** 06/01/2013

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**Notes:**
- Steps are 4 mos.

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**Specialized Earth Moving Equip < 35 Tons**

TEAMSTERS JOINT COUNCIL NO. 10 ZONE A

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**Specialized Earth Moving Equip > 35 Tons**

TEAMSTERS JOINT COUNCIL NO. 10 ZONE A

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**Sprinkler Fitter**

SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1

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

**Effective Date:** 03/01/2017

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**Notes:**
- Apprentice entered prior 9/30/10:
  40/45/50/55/60/65/70/75/80/85
- Steps are 850 hours

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**Steam Boiler Operator**

OPERATING ENGINEERS LOCAL 4

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**Issue Date:** 04/27/2017

**Wage Request Number:** 20170427-077
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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### Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

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### Notes:

Apprentice to Journeyworker Ratio: 1:1

### Terrazzo Finishers

| BRICKLAYER'S LOCAL 3 - MARBLE & TILE | 02/01/2017 | $49.70 | $10.75 | $19.22 | $0.00 | $79.67 |

Issue Date: 04/27/2017  Wage Request Number: 20170427-077  Page 29 of 33
<table>
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[Notes:]

Apprentice to Journeyworker Ratio: 1:3

| TEST BORING DRILLER | 12/01/2016 | $37.70 | $7.60 | $14.35 | $0.00 | $59.65 |
| LABORERS - FOUNDATION AND MARINE | For apprentice rates see "Apprentice-LABORER" |

| TEST BORING DRILLER HELPER | 12/01/2016 | $36.42 | $7.60 | $14.35 | $0.00 | $58.37 |
| LABORERS - FOUNDATION AND MARINE | For apprentice rates see "Apprentice-LABORER" |

| TEST BORING LABORER | 12/01/2016 | $36.30 | $7.60 | $14.35 | $0.00 | $58.25 |
| LABORERS - FOUNDATION AND MARINE | For apprentice rates see "Apprentice-LABORER" |

| TRACTORS/PORTABLE STEAM GENERATORS | 12/01/2016 | $44.94 | $10.00 | $15.25 | $0.00 | $70.19 |
| OPERATING ENGINEERS LOCAL 10 | For apprentice rates see "Apprentice-OPERATING ENGINEERS" |
| 06/01/2017 | $45.93 | $10.00 | $15.25 | $0.00 | $71.18 |
| 12/01/2017 | $46.92 | $10.00 | $15.25 | $0.00 | $72.17 |

| TRAILERS FOR EARTH MOVING EQUIPMENT | 12/01/2016 | $34.12 | $10.91 | $10.89 | $0.00 | $55.92 |
| TEAMSTERS JOINT COUNCIL NO. 10 ZONE A |

| TUNNEL WORK - COMPRESSED AIR | 12/01/2016 | $48.58 | $7.60 | $14.75 | $0.00 | $70.93 |
| LABORERS (COMPRESSED AIR) | For apprentice rates see "Apprentice-LABORER" |

| TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) | 12/01/2016 | $50.58 | $7.60 | $14.75 | $0.00 | $72.93 |
| LABORERS (COMPRESSED AIR) | For apprentice rates see "Apprentice-LABORER" |

| TUNNEL WORK - FREE AIR | 12/01/2016 | $40.65 | $7.60 | $14.75 | $0.00 | $63.00 |
| LABORERS (FREE AIR TUNNEL) | For apprentice rates see "Apprentice-LABORER" |

| TUNNEL WORK - FREE AIR (HAZ. WASTE) | 12/01/2016 | $42.65 | $7.60 | $14.75 | $0.00 | $65.00 |
| LABORERS (FREE AIR TUNNEL) | For apprentice rates see "Apprentice-LABORER" |

<p>| VAC-HAUL | 12/01/2016 | $33.54 | $10.91 | $10.89 | $0.00 | $55.34 |
| TEAMSTERS JOINT COUNCIL NO. 10 ZONE A |</p>
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**Apprentice - LINEMAN (Outside Electrical) - East Local 104**

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**Effective Date - 09/03/2017**

|  |
|-----------------------------|--|
| **Classification** | **Effective Date** | **Base Wage** | **Health** | **Pension** | **Supplemental Unemployment** | **Total Rate** |
| Apprentice | 09/03/2017 | $27.14 | $7.75 | $3.31 | $0.00 | $38.20 |
| 1 | 60 | | | | | |
| 2 | 65 | $29.40 | $7.75 | $3.38 | $0.00 | $40.53 |
| 3 | 70 | $31.66 | $7.75 | $3.45 | $0.00 | $42.86 |
| 4 | 75 | $33.92 | $7.75 | $5.02 | $0.00 | $46.69 |
| 5 | 80 | $36.18 | $7.75 | $5.09 | $0.00 | $49.02 |
| 6 | 85 | $38.45 | $7.75 | $5.15 | $0.00 | $51.35 |
| 7 | 90 | $40.71 | $7.75 | $7.22 | $0.00 | $55.68 |

**Notes:**

Apprentice to Journeyworker Ratio: 1:2

TELEDATA CABLE SPICER

OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104

|  |
|-----------------------------|--|
| **Effective Date** | **Base Wage** | **Health** | **Pension** | **Supplemental Unemployment** | **Total Rate** |
| 01/01/2016 | $28.98 | $4.25 | $3.12 | $0.00 | $36.35 |

TELEDATA LINEMAN/EQUIPMENT OPERATOR

OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104

|  |
|-----------------------------|--|
| **Effective Date** | **Base Wage** | **Health** | **Pension** | **Supplemental Unemployment** | **Total Rate** |
| 01/01/2016 | $27.31 | $4.25 | $3.07 | $0.00 | $34.63 |

TELEDATA WIREMAN/INSTALLER/TECHNICIAN

OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104

|  |
|-----------------------------|--|
| **Effective Date** | **Base Wage** | **Health** | **Pension** | **Supplemental Unemployment** | **Total Rate** |
| 01/01/2016 | $27.31 | $4.25 | $3.07 | $0.00 | $34.63 |

TREE TRIMMER

OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104

|  |
|-----------------------------|--|
| **Effective Date** | **Base Wage** | **Health** | **Pension** | **Supplemental Unemployment** | **Total Rate** |
| 01/31/2016 | $18.51 | $3.55 | $0.00 | $0.00 | $22.06 |

This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company’s equipment, and (c) by a person who is using hand or mechanical cutting methods and is not on the ground.

TREE TRIMMER GROUNDMAN

OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104

|  |
|-----------------------------|--|
| **Effective Date** | **Base Wage** | **Health** | **Pension** | **Supplemental Unemployment** | **Total Rate** |
| 01/31/2016 | $16.32 | $3.55 | $0.00 | $0.00 | $19.87 |

This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company’s equipment, and (c) by a person who is using hand or mechanical cutting methods and is on the ground. This classification does not apply to wholesale tree removal.
**Classification**

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<th>Effective Date</th>
<th>Base Wage</th>
<th>Health</th>
<th>Pension</th>
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<th>Total Rate</th>
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</table>

**Additional Apprentice Information:**

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

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

All steps are six months (1000 hours.)
Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

** Multiple ratios are listed in the comment field.

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

**** APP to JM; 1:1, 1:2, 2:3, 3:4, 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.
MT. WOLLASTON CEMETERY IMPROVEMENTS
20 SEA STREET
CITY OF QUINCY, MA

MAY 4, 2017

PREPARED FOR:

CITY OF QUINCY
CITY HALL
1305 HANCOCK STREET
QUINCY, MA 02169

MAYOR:
THOMAS P. KOCH

CITY OF QUINCY
PARK & FORESTRY DEPARTMENT
1 MERRYMOUNT PARKWAY
QUINCY, MA 02169

DIRECTOR:
PAUL FRANZ

Design Consultants, Inc.
CIVIL ENGINEERS and LAND SURVEYORS
SOMERVILLE - NEWBURYPORT - QUINCY
PHONE: 617 776 3360 WEBSITE: WWW.DCI MA.COM
NOTES:
1. EXISTING CONDITIONS BASED ON SURVEY DEVELOPED BY PHOTOGRAMMETRIC TECHNOLOGY, INC. OF WENCOGH. AN ENTITLED "WOLLAUNCH CEMETARY, QUALITY, AN" DATED DECEMBER 7TH, 2016.