

TOWN OF NAHANT, MASSACHUSETTS

CONTRACT AND SPECIFICATIONS

FOR

CONSTRUCTION OF

FOX HILL AND EMERALD ROAD WATER MAIN IMPROVEMENTS

FOX HILL NEIGHBORHOOD DRAIN IMPROVEMENTS

FEBRUARY 2024



VM Consulting Engineers LLC

www.vmconsultingllc.com

Salem, MA

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SECTION 00030

ADVERTISEMENT FOR BIDS

FOX HILL AND EMERALD ROAD WATER MAIN IMPROVEMENTS

FOX HILL NEIGHBORHOOD DRAIN IMPROVEMENTS

The Town of Nahant through its Board of Selectmen will receive sealed Bids for the Fox Hill and Emerald Road Water Main Improvements and Fox Hill Neighborhood Drain Improvements Project until February 29, 2024 at 11:00 A.M. local time, at the Office of the Town Administrator, Nahant Town Hall, 334 Nahant Road, Nahant, MA 01908 at which time and place they will be publicly opened and read.

The Work of this Contract generally consists approximately 1,100 linear feet of new 8-inch diameter ductile iron water main in Fox Hill Road, including replacement of associated gate valves, hydrants, service connections, fittings and appurtenances, replacement and extension of approximately 13 water services in Emerald Road from a 4-inch main to an existing 10-inch main and abandonment of approximately 950 linear feet 4-inch main in Emerald Road, and construction of 625 linear feet of new drainage in Castle Road and Ward Road and 240 linear feet in Fox Hill Road. All work except permanent pavement must be completed by November 15, 2024.

The project includes Additive Alternative A for replacement of approximately 440 linear feet of 10-inch drainage, including replacement of catch basins and drain manholes in Castle Road.

The Contractor shall supply all labor, materials and equipment necessary to complete the work shown on the Contract Drawings and hereinafter contained in the Specifications.

Plans and specifications are available for download at <https://nahant.org/administrator/bids-rfp/> starting February 14, 2024 at 10 A.M.

Each bid shall be accompanied by a Bid Bond, Cash, a Certified Check or a Treasurer's or Cashier's Check issued by a responsible Bank or Trust Company, in the amount of five (5%) percent of the submitted bid, as Bid Security. The checks are to be made payable to the Town of Nahant.

Attention of the Bidder is called to the requirements for minimum wage rates to be paid under this Contract. Minimum wage rates are required as per M.G.L, Chapter 149, and Section 26 to 27 D inclusive and reporting associated thereto. Minimum wage rates determined by the Commissioner are as contained in the Supplementary Conditions section of the Contract Documents.

The successful Bidder will be required to furnish a Performance Bond and Labor and Materials Payment Bond in the amount of one hundred percent (100%) of the Contract.

Contract payment will be by the lump sum price and/or unit price method as indicated on the Bid Form. No Bidder may withdraw his/her Bid for a period of ninety (90) days after the date designated above for the opening.

Bids for this Contract are subject to the provisions of Massachusetts General Laws (MGL) Chapter 30, Section 39M.

The Owner reserves the right to reject any or all Bids or to accept any Bid deemed by them to be in the best interest of the Town of Nahant, and to limit the extent of the work to keep within the limits of available funds.

END OF SECTION

SECTION 00100

INSTRUCTIONS TO BIDDERS

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ARTICLE 1. RECEIPT OF BIDS

- 1.1 Sealed bids for the work of this Contract will be received at the time and place indicated in the Advertisement for Bids.
- 1.2 The Town of Nahant, Massachusetts (herein called the "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/her bid is in the possession of the responsible official or his/her 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.
- 1.4 Each bid must be submitted in a sealed envelope, addressed to the Office of the Town Administrator as set out below. Each sealed envelope containing a bid must be plainly marked on the outside as "Fox Hill and Emerald Road Water Main Improvements, Fox Hill Neighborhood Drain Improvements" and shall bear the name of the bidder, his/her address and also his/her license number, if applicable. If forwarded by mail or any other delivery service, the sealed envelope containing the bid must be enclosed in another envelope addressed to the Office of the Town Administrator. The Bid Security shall be attached to the signature page of the bid.

Mailed and Hand Delivered Bids should be addressed to:

Office of the Town Administrator
Nahant Town Hall
334 Nahant Road
Nahant, MA 01908

ARTICLE 2. SCOPE OF WORK/LOCATION OF WORK

- 2.1 The Work of this Contract generally consists approximately 1,100 linear feet of new 8-inch diameter ductile iron water main in Fox Hill Road, including replacement of associated gate valves, hydrants, service connections, fittings and appurtenances, replacement and extension of approximately 13 water services in Emerald Road from a 4-inch main to an existing 10-inch main and abandonment of approximately 950 linear feet 4-inch main in Emerald Road, and construction of 625 linear feet of new drainage in Castle Road and Ward Road and 240 linear feet in Fox Hill Road. All work except permanent pavement must be completed within 120 calendar days.

The project includes Additive Alternative A for replacement of approximately 440 linear feet of new 10-inch drainage, including replacement of catch basins and drain manholes in Castle Road.

INSTRUCTIONS TO BIDDERS

- 2.2 The location of the project is Castle Road, Emerald Road, Fox Hill Road, and Ward Road in Nahant, Massachusetts.

The Additive Alternate is in Castle Road in Nahant, MA.

- 2.3 The work includes the furnishing of all labor, materials and equipment for completing the work as shown on the Contract Drawings and as herein specified or reasonably implied.
- 2.4 The Owner reserves the right to eliminate certain sections of the work or parts of sections, as may be determined by them as a basis of award, to keep within the limits of available funds, or to add sections of the work previously eliminated.

ARTICLE 3 SCHEDULING

- 3.1 The work shall start on the date indicated on the Notice to Proceed in the Agreement Section of the Contract, and proceed on a continuous basis until complete, unless directed differently by Owner.

ARTICLE 4 FORM OF BID

- 4.1 All Bids must be upon the blank Bid Form annexed hereto (Section 00300), and each Bid shall state the proposed price of each item of the work, both in words and in figures. The total of the unit and/or lump sum item prices when correctly calculated will be used in the comparison of Bids received.
- 4.2 The form of Bid must not be changed and it must be signed by the Bidder with his/her business address and place of residence.
- 4.3 All blanks for bid prices must be completed, in ink or typewritten.
- 4.4 A conditional or qualified bid will not be accepted.
- 4.5 All certificates must be filled out and signed.

ARTICLE 5 BID SECURITY

- 5.1 Each Bid shall be accompanied by a Bid Bond written by a surety company qualified to do business in Massachusetts, or by Cash, or a Certified Check, or Treasurer's or Cashier's Check issued by a responsible bank or trust company, as Bid Security, in the amount of five (5%) percent of the total Bid, made payable to the Town of Nahant, MA.

- 5.2 The Bid Security of Bidders, except those of the three lowest responsible and eligible Bidders, shall be returned within thirty days, Saturdays, Sundays and holidays excluded, after opening of Bids. The Bid Security of said three lowest Bidders shall be returned upon execution of the Contract.
- 5.3 In case a party to whom a Contract is awarded shall fail or neglect to execute the Contract and furnish the satisfactory bonds within the time specified, the Owner may determine that the Bidder has abandoned the Contract and thereupon the Bid Security accompanying the Bid shall be forfeited to the Owner as liquidated damages for such failure or neglect, and to indemnify said Owner for any loss which may be sustained by failure of the Bidder to execute the Contract and furnish the bonds as aforesaid. After execution of the Contract and acceptance of the bonds by the Owner, the Bid Security accompanying the Bid of the successful Bidder will be returned.

ARTICLE 6. WITHDRAWAL OF BIDS

- 6.1 Once a 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 said Bid within a period of ninety (90) days (Saturdays, Sundays and legal holidays excluded).
- 6.2 Upon proper request and identification, Bids may be withdrawn only as follows:
- a. At any time prior to the designated time for the opening of Bids.
 - b. 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.
- 6.3 Unless a Bid is withdrawn as provided above, the Bidder agrees that it shall be deemed open for acceptance until the Contract 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 7. EXPERIENCE OF BIDDER

- 9.1 Only Bids from Contractors experienced in the type of construction included under this Contract will be favorably considered by the Owner, and each Bidder shall include in the space provided in the Bid, evidence of such experience with satisfactory references, and shall provide on request, information as to organization and equipment available to him for the performance of the work under this Contract.

- 7.2 No award will be made to any Bidder who cannot satisfy the Owner that he/she has sufficient ability and experience in this class of work, a history of maintaining a safe work environment and sufficient capital and plant to enable him to prosecute and complete the work successfully within the time constraints. The Owner's decision of judgment on these matters shall be final, conclusive and binding.

ARTICLE 8. SUBCONTRACTS

- 8.1 The bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner.

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 or account thereof.
- 9.2 To receive consideration, such questions shall be submitted in writing to the Owner, with a copy to the Engineer, at least seven days before the established date for receipt of bids. If the question involves the equality of use of products or methods, it must be accompanied by Drawings, Specifications, or other data in sufficient detail to enable the Engineer to determine the equality or suitability of the product or method. In general, the Engineer 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.
- 9.3 The Engineer will set forth as Addenda, which shall become 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 known to have taken out sets of the Drawings and other Contract Documents.
- 9.4 The Bidder agrees to use the products and methods designated or described in the Specifications as amended by the Addenda.

- 9.5 It shall be the Bidder's responsibility to confirm the existence of Addenda with the Engineer prior to submittal of Bid.

ARTICLE 10. INFORMATION NOT GUARANTEED

- 9.1 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.
- 10.2 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 Contract Drawings, or in the other Contract Documents.
- 10.3 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.
- 10.4 At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Drawings and Contract Documents (including all addenda). The failure or omission of any bidder to examine any form, instrument, or documents shall in no way relieve any bidder from any obligation in respect to his/her bid.

ARTICLE 11 BIDDER RESPONSIBILITY

- 11.1 Bidders must satisfy themselves as to conditions existing on the project site and of the accuracy of the estimated quantities in the Bid schedule, by examination of the site and a review of the Contract Drawings and Specifications including Addenda.
- 11.2 Each Bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. The failure or omission of any Bidder to do any of the foregoing shall in no way relieve any Bidder from any obligation in respect to his Bid.
- 11.3 The Contract Documents contain the provisions required for the construction of the project. Information obtained from an officer, agent, or employee of the Owner or any other person shall not affect the risks or obligations assumed by the Bidder or relieve him from fulfilling any of the conditions of the Contract.

ARTICLE 12. COMPARISON OF BIDS

- 12.1 All Bids will be compared on the basis of the estimate of quantities of work to be done, per unit price and/or lump sum items, as tabulated in the Bid. Estimated quantities are approximate only, being given for the uniform comparison of Bids.
- 12.2 In the event there is a discrepancy in the Bid between the lump sum and unit prices written in words and figures, the prices written in words shall govern.
- 12.3 The Owner does not expressly, or by implication agree that the actual amount of work will correspond therewith, and the right is expressly reserved, to increase or diminish the amount of any class or portion of the work, or to omit construction in certain locations, as may be deemed necessary by the Owner to keep within the limits of available funds.

ARTICLE 13. TELEGRAPHIC MODIFICATION

- 13.1 Any bidder may modify his/her bid by telegraphic communication at any time prior to the scheduled closing time for receipt of bids, provided such telegraphic communication is received by the Owner prior to the closing time, and provided further, the Owner is satisfied that a written confirmation of the telegraph modification over the signature of the bidder is mailed prior to the closing time. The telegraphic communication should not reveal the bid price, but should provide the addition of subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened. If written confirmation is not received within two days from the closing time, no consideration will be given to the telegraphic modification.

ARTICLE 14. RIGHTS RESERVED BY OWNER:

- 14.1 The Owner may waive any informalities or minor defects or reject any and all Bids.
- 14.2 The Owner may make such investigations as it deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein.
- 14.3 The low Bidder shall supply the names and addresses of suppliers and subcontractors when requested to do so by the Owner.

- 14.4 If at the time this Contract is to be awarded, the lowest bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the Owner as available to finance the Contract; the Contract may be awarded on the basis of such bid. The Owner may reject all bids or take other action deemed to be in the best interest of the Town of Nahant.
- 14.5 The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids, should the Owner deem it to be in the public interest to do so.
- 14.6 The Owner may also reject bids which in its sole judgment are either incomplete, conditional, obscure, not responsible or which contain additions not called for, erasures not properly initialed, alterations, or similar irregularities.

ARTICLE 15. AWARD OF CONTRACT

- 15.1 Award will be made to the lowest responsive, responsible, and eligible Bidder. The party to whom the Contract is awarded will be required to execute the Agreement, obtain Payment and Performance Bonds, Insurance Certificates and Certification Form, and a Certificate of Vote of authorization of signature on Documents, within ten (10) calendar days from receipt of Notice of Award. The Notice of Award shall be accompanied by the necessary Agreement and Bid Forms. In case of failure of the Bidder to execute the Agreement and provide the above-mentioned Bonds, Certificates, etc., the Owner may at his option, consider the Bidder in default, in which case the bid security accompanying the Bid shall become property of the Owner.

ARTICLE 16. PAYMENT AND PERFORMANCE BONDS

- 16.1 A Performance Bond and Labor and Materials Payment Bond in the amount of 100 percent of the Contract price, with a corporate surety approved by the Owner will be required for the faithful performance of the Contract.
- 16.2 Attorneys-in-fact who sign Bid Bonds or Payment Bond, must file with each Bond, a certified and effective dated copy of their Power of Attorney.

ARTICLE 17. CONTRACT INSURANCE

- 17.1 The successful bidder shall provide Commercial General Liability Insurance, Automotive Liability Insurance, Worker's Compensation and Employer's Liability Insurance, including other coverages such as indicated in the General Conditions and as amended in the Supplementary Conditions.

- 17.2 The successful bidder shall provide separate Owner's Protective Liability Insurance, with the Owner and Engineer only as insured. A Rider clause to the Contractors's Liability Insurance will not be acceptable.
- 17.3 The Certificate of Insurance shall list the Town of Nahant as an additional insured.

ARTICLE 18. NOTICE TO PROCEED

- 18.1 The Notice to Proceed shall be issued within sixty (60) days of the effective date of the Agreement by the Owner. Should there be reasons why the Notice to Proceed cannot be issued within such period; the time may be extended by mutual agreement between the Owner and the successful bidder. If the Notice to Proceed has not been issued within the sixty (60) day period, or within the period mutually agreed upon, the successful bidder may terminate the Agreement without further liability on the part of either party.

ARTICLE 19. TIME OF STARTING

- 19.1 The work shall start on the date indicated on the Notice to Proceed, and proceed on a continuous basis until complete, unless directed differently by Owner.

ARTICLE 20. TIME OF COMPLETION AND LIQUIDATED DAMAGES

- 20.1 It is the intention of this Contract to complete the work in operating condition as soon as practicable, but not later than 120 consecutive calendar days after date indicated on the Notice to Proceed. The date for commencing Contract time will be the day as indicated on the Notice to Proceed.
- 20.2 The contract consecutive calendar days shall not include the time during which construction has stopped for the winter. The Contractor shall submit a letter to the Engineer documenting the dates for winter shutdown.
- 20.3 The successful bidder agrees to pay as liquidated damages, the sum of one thousand dollars (\$1,000) per day for each calendar day beyond the allowable number of days, for which all work is not completed.

ARTICLE 21. LAWS AND REGULATIONS

- 21.1 The Bidder's attention is directed to the fact that all applicable Local, State and Federal laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract, the same as though herein written in full.
- 21.2 This Contract is subject to the applicable provisions of but not limited to M.G.L. Chap. 30, Section 39M.
- 21.3 This Contract is also subject to the Dig-Safe requirements of M.G.L. Chap. 82, Section 40 and the applicable portions of 527 CMR 13, relating to Blasting.

ARTICLE 22. CONTRACT DRAWINGS

- 22.1 The construction project is as shown on the Contract Drawings for the "Fox Hill and Emerald Road Water Main Improvements," prepared by VM Consulting Engineers, LLC and "Fox Hill Neighborhood Drain Improvements," prepared by New England Civil Engineering Corp dated February 2024.

ARTICLE 23. UNBALANCED BIDS:

- 23.1 The Bidder shall not submit unbalanced prices for any of the bid items on the Bid. All prices shall be reasonable for the Work entailed. The Owner reserves the right to reject any Bid which contains unbalanced prices, considering Bid as non-responsive to the Instructions to Bidders, and consider same as reason for rejecting bid.
- 23.2 Certain bid items may have set minimum and/or maximum prices to provide uniformity in the comparison of bids established by Owner and indicated on the Bid form. Bids submitted not in compliance with these established amounts, may be rejected for non-compliance with the Instructions to Bidders.

ARTICLE 24. SAFETY AND HEALTH REGULATIONS

- 24.1 This project is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in 29CFR, Part 1926, and to all subsequent amendments, and to any application Massachusetts regulations. Contractors shall be familiar with the requirements of these regulations.

ARTICLE 25. SALES TAX EXEMPTION

- 25.1 The Owner will provide a Massachusetts Sales Tax Blanket Exemption Certificate No. applicable to all materials to be furnished under this Contract.
- 25.2 Except as noted above, the successful Bidder and Subcontractors shall pay all taxes levied by law on materials, labor or services furnished by them. Payments of such levies and sales taxes will be held to be included in Contract amounts.

ARTICLE 26. PERMITS AND LICENSES:

- 26.1 Permits and licenses: All construction permits and licenses for work within the project shall be obtained by the successful Bidder. The Town of Nahant will waive its fees.

ARTICLE 27. MINIMUM WAGE RATES

- 27.1 Minimum Wage Rates (Heavy Construction) as determined by the Commissioner of the Department of Labor and Industries under the provision of the Massachusetts General Laws, Chapter 149, Sections 26 to 27D, as amended apply to this project. It is the responsibility of the Contractor, before bid opening, to request if necessary, any additional information on Minimum Wage Rates for those tradesmen who are not covered by the following schedule of wage rates, but who may be employed for the proposed work under this Contract.
- 27.2 Minimum wage rates to be used for this Contract are contained in Attachment A of the Supplementary Conditions.
- 27.3 Regulations for the Prevailing Wage Act state that payment of compensation to workmen for work performed on public work on a lump sum basis, piece work system, or a price certain for the completion of a certain amount of work, or the production of a certain result shall be deemed a violation of the Act regardless of the average hourly earnings resulting there from. This shall result in the disqualification of any Bidder employing these methods.
- 27.4 The Contractor shall submit weekly payrolls to the Owner during the progress of this Contract for each day work is performed or no payment shall be made to Contractor.

ARTICLE 28. GUARANTEE

- 28.1 The successful bidder guarantees that the work and services to be performed under this Contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of same, shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Specifications and other Contract Documents and that the strength of all parts shall be adequate and as specified and that the performance test requirements of the Contract shall be fulfilled. This guarantee shall be for a period of one year from and after the date of substantial completion. Paving shall be guaranteed for three (3) years.
- 28.2 If part of the Work is accepted in accordance with that subsection of this Agreement titled Partial Acceptance, the guarantee for that part of the Work shall be for a period of one year from the date fixed for such acceptance.
- 28.3 If at any time within said guarantee period, any part of the work constructed under the terms of this contract shall in the opinion of the Engineer require repair or replacement due to defective work or materials furnished by the Contractor, he/she may notify the Contractor in writing to make the required work and repairs (including all labor and materials) and the Contractor shall perform the same within 10 days. If he/she shall not do so, the Owner may do it and charge the Contractor.
- 28.4 It is expressly understood, however, that these guarantee provisions shall not absolve the Contractor from any liability to the Owner arising out of a failure to substantially complete the work in accordance with plans and specifications.

ARTICLE 29. SITE EXAMINATION

- 29.1 The bidder is expected to examine the sites and then, based upon his own inspections, interpretations and such other investigations as he may desire, decide for himself the character of material to be encountered and excavated, the suitability of the materials to be used for backfilling and other purposes, groundwater conditions, difficulties or obstacles likely to be encountered, and other conditions affecting the work.

ARTICLE 30. BORINGS

- 30.1 The bidder's attention is directed to the fact that borings have not been taken for the design of the project.

ARTICLE 31. POLICE DETAILS

- 31.1 Contractor shall be responsible for developing police detail schedule. Schedule to be pre- approved by Director of Public Works. All time in excess of 8 hours per day shall be pre-approved by Director of Public Works. Contractor will be responsible for any police details that have not been pre- approved. Contractor to schedule all traffic control details through the Nahant Police Department. All invoices will be sent to the Owner. If the Contractor fails to cancel a scheduled detail and the Police Department submits a bill, the Contractor will be responsible for same. The Owner will not reimburse the Contractor for unnecessary detail bills.
- 31.2 Contractor shall keep a daily log of Uniformed Police Officers on-site including name, badge number, and hours on-site. Daily log shall be submitted to Engineer with monthly payment requisition.

ARTICLE 32. CONSTRUCTION HOURS

- 32.1 Construction hours are 7:00 a.m. to 5:00 p.m. on Town roads.

END OF SECTION

SECTION 00300

BID FORM

The undersigned as Bidder, declares that all persons or parties interested in this Bid as principals are named herein; that this Bid is made without collusion with any person, firm or corporation; that he has carefully examined the location of the proposed Work, read the Contract Documents, and that he proposes and agrees to contract with the Town of Nahant in the form of a Contract to be deposited with the Owner, to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish the materials and labor, specified in the Contract, in the manner and time therein prescribed, and according to the requirements of the Owner, as therein set forth, and that he will take in full payment therefore, the amounts resulting from the unit and/or lump sum prices which he bids in the following tabulation, when multiplied by the quantities of Work actually accomplished.

The estimated quantities shown in the following tabulation are approximate and are given to provide a uniform basis for comparison of Bids. The Owner does not expressly or by implication agree that the actual quantities of Work to be done will correspond thereto, and the Owner reserves the right to increase or diminish the quantity of work, or to omit items of Work as required to keep the Work within the limits of available funds.

Bidder hereby agrees to commence Work under this Contract on or before the date specified in the Notice to Proceed and to complete the work in operating condition as soon as practicable, but no later than the date indicated upon in the Notice to Proceed for completion of work, within 120 consecutive calendar days thereafter, unless an extension of time is granted. Bidder further agrees to pay as liquidated damages, the sum of \$1,000.00 for each consecutive calendar day thereafter that such work is not completed, as provided in the Information for Bidders Section of this Contract.

Bidder acknowledges receipt of Addenda:

#1_____ #2_____ #3_____

An unbalanced or unreasonable unit or lump sum price submitted herein may be grounds for rejection of bid.

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 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 Bid is prepared on the basis of compliance with those requirements.

The undersigned as Bidder hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work. The undersigned as Bidder, hereby certifies that he is currently in compliance with the provisions of Massachusetts General Laws, Chapter 151B, governing nondiscrimination in employment.

The undersigned as Bidder, hereby certifies that he will maintain records in reasonable detail, which accurately and fairly reflect the financial transactions and disposition of the Bidder, in accordance with M.G.L. Chapter 30, Section 39R.

The undersigned as Bidder must furnish a 100 percent Performance Bond and a 100 percent Payment Bond with a surety company acceptable to OWNER.

The design of the Fox Hill and Emerald Road Water Main Improvements was prepared by VM Consulting Engineers LLC and the design of the Fox Hill Neighborhood Drain Improvements was prepared by New England Civil Engineering Corp. The Town will be paying for each project through separate funding sources. Therefore, there are separate base bid pay items for the water main improvements and the drain improvements, including separate base bid pay items for the same work (such as pavement repair). The pay items are differentiated by a "W" before the water pay items and a "D" before the drain pay items. Section 01025 – Measurement and Payment correlates to this pay item naming scheme. The Fox Hill Neighborhood Drain Improvements includes an additive alternate. The cost for Mobilization/Demobilization for both water and drainage work will be paid through Item No. W-14, Mobilization/Demobilization.

Determination of the lowest responsible Bidder will be accomplished in the following manner. First, Base Bid subtotals for the Water and Drain Base Bids will be summed and that total will be compared to available funds (as determined by the Town). If available funds remain following that comparison, the Additive Alternate Bid subtotal will be added to the Water Base Bid and Drain Base Bid total, and the determination of the lowest responsible Bidder will be determined on that basis. A Summary of Bids Table is included at the end of this Bid Form and should be completed by the Bidder.

The following unit prices as defined in the Contract Documents are designated for items of work on the basis of quantities estimated by the Engineer. The unit or lump sum price shall be entered in both words and figures in the appropriate space for each item description. Actual payment for unit price items will be for actual quantity of each item, approved by the Engineer, at the unit price bid.

Refer to Section 01024 – Measurement and Payment, Water Bid and Section 01025 – Measurement and Payment, Drain Bid for item descriptions.

BASE BID – Fox Hill and Emerald Road Water Main Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
W-1a	6-inch DI Water Main, CL 52 Pipe	Linear Foot	30	
	Dollars (\$) per unit			
W-1b	8-inch DI Water Main, CL 52 Pipe	Linear Foot	1,110	
	Dollars (\$) per unit			
W-2a	Fittings and Solid Sleeve Couplings	Pound	510	
	Dollars (\$) per unit			
W-2b	Mechanical Joint Restraints	Each	33	
	Dollars (\$) per unit			
W-2c	Push-on Joint Restraints	Each	22	
	Dollars (\$) per unit			
W-3a	6-inch Gate Valve and Boxes	Each	3	
	Dollars (\$) per unit			
W-3b	8-inch Gate Valve and Boxes	Each	2	
	Dollars (\$) per unit			
W-4	Fire Hydrants	Each	3	
	Dollars (\$) per unit			

BASE BID – Fox Hill and Emerald Road Water Main Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
W-5a	1-inch service taps, including corporations, fittings, curb stops and boxes (Fox Hill Road) Dollars (\$) per unit	Each	24	
W-5b	1-inch live service taps, including corporations, fittings, curb stops and boxes (Emerald Road/Willow Road) Dollars (\$) per unit	Each	20	
W-6	1-inch water services, copper tubing Dollars (\$) per unit	Linear Foot	750	
W-7a	Abandon existing 4-inch main in Emerald Road at Spring Road, and remove up to (3) gate valve boxes in Emerald Road. Dollars (\$) per unit	Lump Sum	1	
W-7b	Abandon existing 4-inch main in Willow Road at Valley Road. Dollars (\$) per unit	Lump Sum	1	
W-8	Temporary water piping and service connections Dollars (\$) per unit	Lump Sum	1	
W-9	Test Pits Dollars (\$) per unit	Cubic Yard	20	

BASE BID – Fox Hill and Emerald Road Water Main Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
W-10	Rock Excavation _____ Dollars (\$) _____ per unit (\$50 per CY minimum)	Cubic Yard	45	
W-11	Excavation of Unsuitable Materials Below Grade _____ Dollars (\$) _____ per unit	Cubic Yard	20	
W-12a	Temporary trench pavement _____ Dollars (\$) _____ per unit	Ton	140	
W-12b	Hot Mix Asphalt Binder Course (Trench Repair) _____ Dollars (\$) _____ per unit	Ton	160	
W-12c	Hot Mix Asphalt Top Course (Trench Repair) _____ Dollars (\$) _____ per unit	Ton	100	
W-13	Calcium Chloride _____ Dollars (\$) _____ per unit	Bags	5	
W-14	Mobilization / Demobilization _____ Dollars (\$) _____ per unit	Lump Sum	1	

**Total Amount of Water Base Bid for Comparison of Bids;
Items W-1 through W-14 inclusive:**

\$ _____
(Price in Figures)

(Price in Words) Dollars

BASE BID - Fox Hill Neighborhood Drain Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
D-1	Surveying <hr/> Dollars (\$)) per unit	Lump Sum	1	
D-2	Exploratory Excavation <hr/> Dollars (\$)) per unit	Cubic Yard	200	
D-3	Earth Excavation & Refill Below Normal Depth <hr/> Dollars (\$)) per unit	Cubic Yard	100	
D-4a	Rock Excavation (Minimum) <u>Fifty Dollars</u> Dollars (\$50.00) per unit	Cubic Yard	100	\$5,000.00
D-4b	Rock Excavation (Additional) <hr/> Dollars (\$)) per unit	Cubic Yard	100	
D-5	Cleaning and CCTV Inspection of (6 to 12)-inch Sewer or Drain Pipe <hr/> Dollars (\$)) per unit	Linear Foot	100	
D-6a	Remove, Relocate, Reconnect Sewer Service Pipe, All Depths (Minimum) <u>Two Thousand Dollars</u> Dollars (\$2,000.00) per unit	Each	1	\$2,000.00

BASE BID - Fox Hill Neighborhood Drain Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
D-6b	Remove, Relocate, Reconnect Sewer Service Pipe, All Depths (Additional) Dollars (\$) _____) per unit	Each	1	
D-7	Furnish and Install (10-12)-inch HDPE Drain Pipe, All Depths Dollars (\$) _____) per unit	Linear Foot	900	
D-8	Furnish and Install 8-inch HDPE or Ductile Iron (DI) Drain Pipe, All Depths Dollars (\$) _____) per unit	Linear Foot	90	
D-9	Core Connect to Existing Pipe or Structures; All Sizes Dollars (\$) _____) per unit	Each	10	
D-10	Furnish and Install Brick and Mortar Plug in Pipe Larger than 8-inch Diameter Dollars (\$) _____) per unit	Each	10	
D-11	Remove/Abandon Existing Structures Dollars (\$) _____) per unit	Each	5	

BASE BID - Fox Hill Neighborhood Drain Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
D-12	Install New 5-Foot Diameter "Dog House" Drain Manhole Dollars (\$) _____) per unit	Vertical Foot	5	
D-13	Install New 4-Foot Diameter Catch Basin or Drain Manhole Dollars (\$) _____) per unit	Vertical Foot	45	
D-14	Install New Small Diameter or Masonry Catch Basin or Drain Manhole Dollars (\$) _____) per unit	Vertical Foot	40	
D-15	Manhole Rehabilitation, Replace or Reset Frame and Cover Dollars (\$) _____) per unit	Each	2	
D-16	Reconstruct Sewer or Drain Structures Dollars (\$) _____) per unit	Vertical Foot	14	
D-17	Furnish and Deliver New Manhole or Catch Basin Castings Dollars (\$) _____) per unit	Each	16	

BASE BID - Fox Hill Neighborhood Drain Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
D-18a	Remove, Relocate, and Reconnect 12-inch DI Water Pipe (Minimum) <u>Seven Thousand Five Hundred Dollars</u> Dollars (\$7,500.00) per unit	Each	1	\$7,500.00
D-18b	Remove, Relocate, and Reconnect 12-inch DI Water Pipe (Additional) <u>Dollars (\$</u>) per unit	Each	1	
D-19a	Remove, Relocate, and Reconnect (6 to 8)-inch DI Water Pipe (Minimum) <u>Five Thousand Dollars</u> Dollars (\$5,000.00) per unit	Each	1	\$5,000.00
D-19b	Remove and Relocate (6 to 8)-inch DI Water Pipe (Additional) <u>Dollars (\$</u>) per unit	Each	1	
D-20a	Remove, Relocate, and Reconnect Water Service Pipe including 1-inch Tap, Curb Stop, and Box (Minimum) <u>One Thousand Five Hundred Dollars</u> Dollars (\$1,500.00) per unit	Each	1	\$1,500.00
D-20b	Remove, Relocate, and Reconnect Water Service Pipe including 1-inch Tap, Curb Stop, and Box (Additional) <u>Dollars (\$</u>) per unit	Each	1	

BASE BID - Fox Hill Neighborhood Drain Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
D-21	2-inch Temporary Bituminous Concrete Pavement in Trenches Dollars (\$) _____) per unit	Ton	55	
D-22	4-inch Permanent Bituminous Concrete Pavement in Trenches Dollars (\$) _____) per unit	Ton	155	
D-23	3-1/2-inch Permanent Hand Placed Bituminous Concrete Pavement Dollars (\$) _____) per unit	Ton	6	
D-24	Remove and Reset Granite Curb Dollars (\$) _____) per unit	Linear Foot	15	
D-25	Furnish and Install Loam and Seed Dollars (\$) _____) per unit	Square Yard	100	
D-26	Furnish, Install, Maintain, and Remove Erosion and Sedimentation Barrier Dollars (\$) _____) per unit	Linear Foot	200	
D-27	Furnish, Install, Maintain, and Remove Silt Sacks in Catch Basins Dollars (\$) _____) per unit	Each	14	

**Total Amount of Drain Base Bid for Comparison of Bids;
Items D-1 through D-27 inclusive:**

\$ _____
(Price in Figures)

(Price in Words) Dollars

ADDITIVE ALTERNATE BID - Fox Hill Neighborhood Drain Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
D-1-A	Surveying <hr/> Dollars (\$)) per unit	Lump Sum	1	
D-2-A	Exploratory Excavation <hr/> Dollars (\$)) per unit	Cubic Yard	100	
D-3-A	Earth Excavation & Refill Below Normal Depth <hr/> Dollars (\$)) per unit	Cubic Yard	50	
D-4a-A	Rock Excavation (Minimum) <u>Fifty Dollars</u> Dollars (\$50.00) per unit	Cubic Yard	50	\$2,500.00
D-4b-A	Rock Excavation (Additional) <hr/> Dollars (\$)) per unit	Cubic Yard	50	
D-5-A	Cleaning and CCTV Inspection of (6 to 12)-inch Sewer or Drain Pipe <hr/> Dollars (\$)) per unit	Linear Foot	50	
D-6a-A	Remove, Relocate, Reconnect Sewer Service Pipe, All Depths (Minimum) <u>Two Thousand Dollars</u> Dollars (\$2,000.00) per unit	Each	2	\$4,000.00

ADDITIVE ALTERNATE BID - Fox Hill Neighborhood Drain Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
D-6b-A	Remove, Relocate, Reconnect Sewer Service Pipe, All Depths (Additional) Dollars (_____) per unit	Each	2	
D-7-A	Furnish and Install (10-12)-inch PVC Drain Pipe, All Depths Dollars (\$) _____) per unit	Linear Foot	450	
D-8-A	Furnish and Install 8-inch HDPE or Ductile Iron (DI) Drain Pipe, All Depths Dollars (\$) _____) per unit	Linear Foot	75	
D-9-A	Core Connect to Existing Pipe or Structures; All Sizes Dollars (\$) _____) per unit	Each	10	
D-10-A	Furnish and Install Brick and Mortar Plug in Pipe Larger Than 8-inch Diameter Dollars (\$) _____) per unit	Each	5	
D-11-A	Remove/Abandon Existing Structures Dollars (\$) _____) per unit	Each	5	

ADDITIVE ALTERNATE BID - Fox Hill Neighborhood Drain Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
D-18a-A	Remove, Relocate, and Reconnect 12-inch DI Water Pipe (Minimum) <u>Seven Thousand Five Hundred Dollars</u> Dollars (\$7,500.00) per unit	Each	1	\$7,500.00
D-18b-A	Remove, Relocate, and Reconnect 12-inch DI Water Pipe (Additional) Dollars (\$) per unit	Each	1	
D-19a-A	Remove, Relocate, and Reconnect (6 to 8)-inch DI Water Pipe (Minimum) <u>Five Thousand Dollars</u> Dollars (\$5,000.00) per unit	Each	0	\$0.00
D-19b-A	Remove and Relocate (6 to 8)-inch DI Water Pipe (Additional) <u>Zero Dollars</u> Dollars (\$0.00) per unit	Each	0	\$0.00
D-20a-A	Remove, Relocate, and Reconnect Water Service Pipe including 1-inch Tap, Curb Stop, and Box (Minimum) <u>One Thousand Five Hundred Dollars</u> Dollars (\$1,500.00) per unit	Each	2	\$3,000.00
D-20b-A	Remove, Relocate, and Reconnect Water Service Pipe including 1-inch Tap, Curb Stop, and Box (Additional) Dollars (\$) per unit	Each	2	

ADDITIVE ALTERNATE BID - Fox Hill Neighborhood Drain Improvements				
Item No.	Description	Units	Estimated Quantity	Total Dollars
D-21-A	2-inch Temporary Bituminous Concrete Pavement in Trenches Dollars (\$) _____) per unit	Square Yard	250	
D-22-A	4-inch Permanent Bituminous Concrete Pavement in Trenches Dollars (\$) _____) per unit	Square Yard	350	
D-23-A	3-1/2-inch Permanent Hand Placed Bit. Concrete Pavement Dollars (\$) _____) per unit	Square Yard	25	
D-24-A	Remove and Reset Granite Curb Dollars (\$) _____) per unit	Linear Foot	10	
D-25-A	Furnish and Install Loam and Seed Dollars (\$) _____) per unit	Square Yard	100	
D-26-A	Furnish, Install, Maintain and Remove Erosion and Sedimentation Barrier Dollars (\$) _____) per unit	Linear Foot	100	
D-27-A	Furnish, Install, Maintain and Remove Silt Sacks in Catchbasins Dollars (\$) _____) per unit	Each	7	

**Total Amount of Additive Alternate Bid for Comparison of Bids;
Items D-1-A through D-27-A inclusive:**

\$ _____
(Price in Figures)

(Price in Words) Dollars

Summary of Bids Table

Bid	Price in Dollars
WATER BASE BID – Fox Hill and Emerald Road Water Main Improvements Subtotal	\$
DRAIN BASE BID - Fox Hill Neighborhood Drain Improvements Subtotal	\$
Water and Drain Base Bids Total	\$
ADDITIVE ALTERNATE BID - Fox Hill Neighborhood Drain Improvements Subtotal	\$
Base Bids and Alternate Bid Total	\$

Respectfully Submitted:

Signature

Address

Title

Date

Phone Number

Email Address

Seal (If Bid is by Corporation)

Bidders shall submit the following completed forms with their bid:

1. Bid Bond
2. Statement of Experience
3. Certificate of Debarment
4. Certificate of Foreign Corporation
5. OSHA Certification
6. Non-Collusive Affidavit
7. Certificate as to Corporate Bidder
8. Certificate as to Compliance with Tax Law
9. Bidder's Certificate Regarding Payment of Prevailing Wages
10. Certificate of Vote

Failure to submit the Bid Bond with the Bid Form shall be cause for rejection of the Bid Form.

STATEMENT OF EXPERIENCE: The undersigned as Bidder declares that he has successfully accomplished similar work in the following places:

1. Description of Project:

(Include type of project, total value of Contract, date of completion, etc.)

Owner & Contact Person

(Names, Addresses and Telephone #'s.)

Engineer & Contact Person

2. Description of Project

(Include type of project, total value of Contract, date of completion, etc.)

Owner & Contact Person

(Names, Addresses and Telephone #'s.)

Engineer & Contact Person

3. Description of Project

(Include type of project, total value of Contract, date of completion, etc.)

Owner & Contact Person

(Names, Addresses and Telephone #'s.)

Engineer & Contact Person

NOTE: Bidders may attach supplementary information, if necessary, to indicate the experience, organization, and equipment available to undertake the Work in the event of an award of the Contract.

The Bidder shall list below, the name/names of subcontractor, if other than Bidder, who shall perform work on the project.

A. _____

B. _____

The Bidder shall submit a list of experience for above sub-contractor.

Each Bid shall be accompanied by a Bid Security in the amount of 5% of the Total Bid Price, and no Bidder may withdraw his Bid for a period of ninety (90) days after the date of Bid opening, excluding Saturdays, Sundays and holidays. Bid shall be accompanied by a Bid Security in the amount of 5% of the Total Bid Price.

A Performance Bond and Labor and Materials Payment Bond in the amount of 100 percent of the Contract Price, with a corporate surety approved by the OWNER, will be required for the faithful performance of the Contract.

BIDDER: The full name and residence of all persons and parties interested in this Bid as principals, is as follows:

This Bid must bear the written signature of the Bidder or his 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. The Certificate as to Corporate Bidder Form must be completed following this page.

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CERTIFICATE OF DEBARMENT

The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine or any other applicable debarment provisions of any other chapter of the General Law or any rule or regulation promulgated there under M.G.L. c.149, ss. 44E(2) and 44F(2).

(Company Name)

(Signature/Title)

CERTIFICATE OF FOREIGN CORPORATION

If the Bidder is a foreign corporation, by affixing his/her signature, the Bidder certifies that the corporation is qualified under provision of MGL C181, Section 4 to do business in the Commonwealth of Massachusetts.

(Company Name)

(Signature/Title)

If awarded the Contract, the Contractor shall provide with his agreement package, a certificate from the Secretary of the Commonwealth of Massachusetts that the corporation is qualified under provisions of MGL C181, Section 4, to do business in the Commonwealth.

Dated: _____

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OSHA CERTIFICATION

The undersigned agrees that if he is selected as the contractor, he will comply with the provisions of M.G.L. Chapter 30, Section 39S.

The undersigned certifies, under penalties of perjury, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

Date: _____

(Name of General Bidder)

By: _____
(signature)

(Name of person signing bid and title)

(Business Address)

(City and State)

(Telephone Number)

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NON-COLLUSIVE AFFIDAVIT

Commonwealth or State of

County of

being first duly sworn, deposes and says,

That he/she is _____, the party making the foregoing bid; that such 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 Board of Selectmen, Town of Nahant, Nahant, Massachusetts, 01908 or any person interested in the proposed contract, and that all statements in said bid are true.

The undersigned certifies that under penalties of perjury that this bid is in all respects bonified, fair and made without collusion or fraud with any other person. As use in this paragraph, the "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

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 _____,
2024.

Notary Public

My commission expires _____

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CERTIFICATE AS TO CORPORATE BIDDER

I, _____ certify that I am the
_____ of the corporation named as bidder
in the Bid included herein; that _____,
who signed said Bid on behalf of the Bidder was then _____
_____ of said corporation; that I know his/her signature; that his/her signature thereon is
genuine and that said Bid was duly signed, sealed and executed for and on behalf of
said corporation by authority of its governing body.

(Corporate Seal)

(Secretary – Clerk)

Dated: _____

CERTIFICATE AS TO COMPLIANCE WITH TAX LAW

Pursuant to M.G.L. Ch. 62C, sec. 49A, I certify under the pains and penalties of perjury that I, to my best knowledge and belief, have complied with all the laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting of child support.

Social Security Number or
Federal Identification Number

Signature of Individual
or Corporate Name

By:

Corporate Office
(if applicable)

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**BIDDER'S CERTIFICATION REGARDING PAYMENT OF PREVAILING
WAGES**

The undersigned bidder hereby certifies, under the pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to the employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Industries. The undersigned bidder agrees to indemnify the awarding authority for, from and against any loss, expenses, damages, action or claims, including any expense incurred in connection with any delay or stoppage of the project work, arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates, or (2) the failure of the bidder, if selected as the contractor, to pay laborers employed on the project the said applicable prevailing wages.

Dated: _____

Name of Bidder:

By: _____

Name: _____

Title: _____

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CERTIFICATE OF VOTE

I hereby certify that at a meeting of the Board of Directors
of the _____

(Corporation named as Contractor herein)

held at _____ on the _____ day of

_____, _____, at which a quorum was present and

acting, it was voted that _____
(Name)

(Officer)

of the _____
(Corporation named as Contractor herein)

be and hereby is authorized to execute and deliver for and on behalf of the Corporation
a Contract with the Board of Selectmen, Town of Nahant, Nahant, Massachusetts in
connection with

for the Town of Nahant and, as Principal, to execute Contract as presented to and
made a part of the records of said meeting.

I further certify that _____ is the duly qualified.

and acting _____ of the Corporation

and that said vote has not been repealed, rescinded or amended.

A True Copy of the Record

Attest: _____ (CORPORATE SEAL)

Subscribed and sworn to this _____ day of _____, 2024,

before me, _____ (SEAL)

Notary Public

My commission expires: _____

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BID BOND (PENAL SUM FORM)

Bidder Name: [Full formal name of Bidder] Address <i>(principal place of business)</i> : [Address of Bidder's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Address <i>(principal place of business)</i> : [Address of Owner's principal place of business]	Bid Project <i>(name and location)</i> : [Owner project/contract name, and location of the project] Bid Due Date: [Enter date bid is due]
Bond Penal Sum: [Amount] Date of Bond: [Date]	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder	Surety
_____ <i>(Full formal name of Bidder)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature) (Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i>	

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
 - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2. All Bids are rejected by Owner, or
 - 3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00500
NOTICE OF AWARD

TO: _____

Project Description: Fox Hill and Emerald Road Water Main Improvements, Fox Hill Neighborhood Drain Improvements, Nahant, MA

The Owner has considered the Bid submitted by you for the above-described work on _____
_____ 2024 in response to its Advertisement for Bids and Instructions to Bidders.

You are hereby notified that your Bid has been accepted for Items totaling the amount of

_____,
based upon summation of lump sum prices, and/or unit prices upon estimated quantities.

You are required by the Instructions to Bidders to execute the Contract and furnish the required Contractor's Performance, Bond, Payment Bond and Certificate of Insurance within fourteen (14) consecutive calendar days from the date of receipt of this Notice of Award.

If you fail to execute said Contract and to furnish said Bonds and Certificates within fourteen (14) days from the date of receipt of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your Bid 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 within five (5) days an acknowledged copy of this Notice of Award to the OWNER.

Dated this _____ day of _____, 2024.

By _____

Title: Town Administrator

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged, this the _____ day of _____, 2024 .

By: _____

Title: _____

SECTION 00510

CONTRACT AGREEMENT

TOWN OF NAHANT

CONTRACT FOR

FOX HILL AND EMERALD ROAD WATER MAIN IMPROVEMENTS,
FOX HILL NEIGHBORHOOD DRAIN IMPROVEMENTS

This Contract is made this _____ day of _____, 2024 by and between the Town of Nahant, a municipal corporation located within the Commonwealth of Massachusetts, acting through its Board of Selectmen (hereinafter, the "Town"), and

_____, a

corporation with a business address at _____

_____ (hereinafter, the "Contractor").

ARTICLE I

SCOPE OF SERVICES

The Contractor shall furnish and install construction of approximately 1,100 linear feet of new 8-inch diameter ductile iron water main in Fox Hill Road, replacement and extension of approximately 13 water services in Emerald Road from a 4-inch main to an existing 10-inch main and abandonment of approximately 950 linear feet 4-inch main in Emerald Road, and construction of 625 linear feet of new drainage in Castle Road and Ward Road and 240 linear feet in Fox Hill Road. The project includes Additive Alternative A for 440 linear feet of new 10-inch drainage, including replacement of catch basins and drain manholes in Castle Road as orders furnished by the Town or its agent, at a cost of

(\$ _____), in accordance with the bid specifications contained in an Invitation for Bids (IFB) issued by the Town. Contract documents shall include, in addition to said IFB, the Contractor's bid, bonds and insurance certificates, all of which are incorporated herein by reference.

ARTICLE II

TERM OF CONTRACT

This contract shall be effective as of the date first written above and shall terminate 110 consecutive calendar days starting ten (10) consecutive calendar days after the issuance of the notice to proceed.

All Work and any awarded additive alternatives shall be completed by November 15, 2024. The contract consecutive calendar days shall not include the time during which construction has stopped for the winter. The Contractor shall submit a letter to the Engineer documenting the dates for winter shutdown.

ARTICLE III COMPENSATION

1. Contract Sum. The Town shall pay the Contractor in current funds for the performance of the work described in the Invitation to Bid and at the unit prices submitted, for a Contract Sum not to exceed \$ _____, subject to appropriation.
2. Payment Schedule. Compensation for work performed pursuant to this Contract shall be monthly cost estimates in compliance with submitted bid prices.

ARTICLE IV AFFIRMATIVE ACTION / PREVAILING WAGES

1. The parties hereto agree that it shall be a material breach of this contract for the contractor to engage in any practice which shall violate any provision of Massachusetts General Laws, Chapter 151B, relative to discrimination or privileges of employment because of race, color, religion, sex, national origin, ancestry, age, sexual orientation or disability.
2. This Contract shall be subject to the Minimum Wage Schedule, as determined by the Commission of Labor and Industries pursuant to the provisions of Chapter 149, Section 26 to 27D inclusive, of the General Laws concerning wages.

ARTICLE V COMPLIANCE WITH LAWS

The Contractor shall comply with all Federal, State and local laws, rules, regulations and orders applicable to the work provided pursuant to this Contract, and shall be responsible for obtaining all necessary licenses, permits, and approvals.

ARTICLE VI INCORPORATION OF G.L.

This Contract shall be considered to include all terms required to be included by the General Laws of the Commonwealth of Massachusetts, as amended, and any other laws as though such terms were set forth in full herein, to the extent that the same are applicable to this contract and the Contractor.

ARTICLE VII INDEPENDENT CONTRACTOR

The Contractor acknowledges and agrees that it is acting as an independent contractor for all work and services rendered pursuant to this Contract, and shall not be considered an employee or agent of the Town for any purpose.

ARTICLE VIII TOWN'S LIABILITY

The Town's liability under this Contract shall be to make all payments when they shall become due, and the Town shall be under no further obligation or other liability. Nothing in this Contract shall be construed to render the Board of Selectmen, or any other officer of the Town, or their successors in office, personally liable for any obligation under this contract.

ARTICLE IX INDEMNIFICATION

The Contractor shall indemnify and hold harmless the Town, its officers, boards, agents and employees from any loss, damage, cost, charge, expense or claim for injury to person or property, which may be made as a result of any act, omission or default on the part of the Contractor, or any of its agents or employees, and will pay promptly on demand all costs and expenses of the investigation thereof, including attorney's fees and expenses. If any such claim is made, the Town may retain out of any payments, then or thereafter due to the Contractor, a sufficient amount to protect the Town against such claims, costs and expenses.

ARTICLE X INSURANCE

1. The Contractor shall obtain and maintain during the term of this Contract the insurance coverage in companies licensed to do business in the Commonwealth of Massachusetts, and acceptable to the Town, as required by the General Contract Conditions in the Invitation to Bid and incorporated herein.
2. All policies shall identify the Town as an additional insured (except Workers' Compensation) and shall provide that the Town shall receive written notification at least 30 days prior to the effective date of any amendment or cancellation. Certificates evidencing all such coverage shall be provided to the Town at the execution of this contract. Each such certificate shall specifically refer to the Contract and shall state that such insurance is as required by the Contract. Failure to provide or to continue in force such insurance shall be deemed a material breach of the Contract and shall be grounds for immediate termination.

ARTICLE XI PERFORMANCE AND PAYMENT BOND

The Contractor shall furnish a bond in a form and with a surety company approved by the Town and authorized to do business in the Commonwealth of Massachusetts, conditioned upon the Contractor fully performing all his obligations under this Contract, and making full payment for all labor performed or materials furnished in the work. The penal sum of the bonds shall be the full amount of the Contract price, including all services of whatever kind required thereby. Failure to provide such performance bond shall be grounds for termination.

ARTICLE XII ASSIGNMENT

The Contractor shall not assign, sublet or otherwise transfer this Contract, in whole or in part, without the prior written consent of the Town, and shall not assign any of the moneys payable under this Contract, except by and with the written consent of the Town.

ARTICLE XIII INSPECTION AND REPORTS

The Town shall have the right at any time to inspect the work of the Contractor, including the right to enter upon any property owned or occupied by the Contractor, whether situated within or beyond the limits of the Town. Whenever requested, the Contractor shall immediately furnish to the Town full and complete written reports of his operation under this Contract in such detail and with such information as the Town may request.

ARTICLE XIV TERMINATION FOR CAUSE

If at any time during the term of this contract the Town determines that the Contractor has breached the terms of this Contract by negligently or incompetently performing the work, or any part thereof, or by failing to perform the same, to the satisfaction of the Town, or by not complying with the direction of the Town or its agents, or by otherwise failing to perform this Contract in accordance with all of its terms and provisions, the Town shall notify the Contractor in writing stating therein the nature of the alleged breach and directing the Contractor to cure such breach within ten (10) days. The Contractor specifically agrees that it shall indemnify and hold harmless the Town as provided in Article IX from any loss, damage, cost, charge, expense or claim arising out of or resulting from such breach regardless of its knowledge or authorization of the actions resulting in the breach. If the Contractor fails to cure said breach within ten (10) days, the Town may, at its election at any time after the expiration of said ten (10) days, terminate this Contract by giving written notice thereof to the Contractor specifying the effective date of the termination. Upon the date so specified, this contract shall terminate. Such termination shall not prejudice or waive any rights or action which the Town may have against the Contractor up to the date of such termination, and the Contractor shall be liable to the Town for any amount which it may be required to pay in excess of the Contract Sum provided herein in order to complete the work specified herein in a timely manner.

ARTICLE XV NOTICE

Any and all notices, or other communications required or permitted under this contract, shall be in writing and delivered by hand or mailed postage prepaid, return receipt requested, by registered or certified mail or by other reputable delivery service, to the parties at the addresses set forth on Page 1 or furnished from time to time in writing hereafter by one party to the other party.

Any such notice or correspondence shall be deemed given when so delivered by hand, if so mailed, when deposited with the U.S. Postal Service or, if sent by private overnight or other delivery service, when deposited with such delivery service.

ARTICLE XVI SEVERABILITY

If any term or condition of this contract or any application thereof shall to any extent be held invalid, illegal or unenforceable by the court of competent jurisdiction, the validity, legality, and enforceability of the remaining terms and conditions of this contract shall not be deemed affected thereby unless one or both parties would be substantially or materially prejudiced.

ARTICLE XVII GOVERNING LAW

This contract shall be governed by, construed and enforced in accordance with the laws of the Commonwealth of Massachusetts, except for provisions with regard to conflicts of laws, and the Contractor submits to the jurisdiction of any of the appropriate Massachusetts courts for the adjudication of disputes arising out of this Contract.

ARTICLE XVIII
ENTIRE AGREEMENT

This contract, including all documents incorporated herein by reference, constitutes the entire integrated agreement between the parties with respect to the matters described. This agreement supersedes all prior agreements, negotiations and representations, either written or oral, and it shall not be modified or amended except by a written document executed by the parties hereto.

The Contract shall include the following component parts:

- a. Invitation to Bid, Instructions to Bidders and Form of Bid
- b. This Instrument
- c. General Conditions
- d. Special Conditions
- e. General Scope of Work
- f. Supplemental Conditions
- g. Contractor's Bid Proposal
- h. Specifications
- i. Technical Specifications
- j. Drawings

The foregoing component parts, together with all other documents enumerated in this Article, are fully incorporated in this contract by reference. In the event that any provision in any component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this Article shall govern, except as otherwise specifically stated. The various provisions in Addenda shall be construed in the order preference of the component part of the Contract which each modifies.

(Contractor's Name)

By _____

Antonio Barletta
Town Administrator

Its Duly Authorized Officer or Agent

TOWN OF NAHANT
BOARD OF SELECTMEN

In accordance with M.G.L. c. 44, section 31C, this is to certify that an appropriation in the amount of this contract is available, therefore, and that the Town Accountant has been authorized to execute the contract and approve all requisitions and change orders.

Alison Nieto, Town Accountant

SECTION 00520

NOTICE TO PROCEED

Dated:

To:

You are hereby notified to commence work in accordance with the Contract dated _____, 2024 for the Fox Hill and Emerald Road Water Main Improvements, Fox Hill Neighborhood Drain Improvements in Nahant, MA 01908 on or before _____, 2024 and you are to complete all work within 120 consecutive calendar days thereafter. The date of completion of all work (with the exception of final paving which shall be completed in Spring 2024) is, therefore, _____, 2024.

TOWN OF NAHANT

BY

Antonio Barletta.
Title: Town Administrator

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged,
this _____ day of _____, 2024.

By _____

Title: _____

(Bidder) _____

(By) _____

(Title) _____

END OF SECTION

NOTICE TO PROCEED

00520 - 1

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PERFORMANCE BOND

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Mailing address <i>(principal place of business)</i> : [Address of Owner's principal place of business]	Contract Description <i>(name and location)</i> : [Owner's project/contract name, and location of the project] Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____	By: _____
<i>(Signature)</i>	<i>(Signature)(Attach Power of Attorney)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____	Attest: _____
<i>(Signature)</i>	<i>(Signature)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- 6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
- 7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- 8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
- 9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
- 10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
- 11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
- 12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
- 13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

PAYMENT BOND

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Mailing address <i>(principal place of business)</i> : [Address of Owner's principal place of business]	Contract Description <i>(name and location)</i> : [Owner's project/contract name, and location of the project] Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:
Engineer:
Contractor:
Project:
Contract Name:

Owner's Project No.:
Engineer's Project No.:
Contractor's Project No.:

This ☐ Preliminary ☐ Final Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

[Describe the portion of the work for which Certificate of Substantial Completion is issued]

Date of Substantial Completion: **[Enter date, as determined by Engineer]**

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's Responsibilities: ☐ None ☐ As follows:

[List amendments to Owner's Responsibilities]

Amendments to Contractor's Responsibilities: ☐ None ☐ As follows:

[List amendments to Contractor's Responsibilities]

The following documents are attached to and made a part of this Certificate:

[List attachments such as punch list; other documents]

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

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CHANGE ORDER

Change Order No. _____

Date of Issuance: _____ Effective Date: _____
Owner: Town of Nahant Owner's Contract No.: _____
Contractor: _____ Contractor's Project No.: _____
Engineer: VM Consulting Engineers, LLC.
Project: Fox Hill and Emerald Road Water Improvements, Fox Hill Neighborhood Drain Improvements

The Contract is modified as follows upon execution of this Change Order:
Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES <i>[note changes in Milestones if applicable]</i>
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ____ to No. ____: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. ____ to No. ____: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:

ACCEPTED:

ACCEPTED:

By: _____
VM Consulting Engineers, LLC.

By: _____
Owner (Authorized Signature)

By: _____
Contractor (Authorized Signature)

Title: _____

Title _____

Title _____

Date: _____

Date _____

Date _____

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document 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, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
- 11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 - 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 - 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 - 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 - 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 - 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 - 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 - 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 - 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 - 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 - 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice 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.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *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, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *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.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *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 of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, 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 a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire 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; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, 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 exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the 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 is not intended to and 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 Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. 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 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means 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, means 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, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that 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 Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for 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;
 - 2. a preliminary Schedule of Submittals; 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.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, 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 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will 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 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 therefor.
 - 2. Contractor's Schedule of 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 the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required 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.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will 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.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract 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, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer 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 part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. 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 had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); 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).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. 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 its consultants, including electronic media versions, or reuse any 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 adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract 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 Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *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.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 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 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing 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.

- 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 permanent improvements are to be made 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.

5.02 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all 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 directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas 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 of 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 structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

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

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 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 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, 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 fall within any one or more of the categories described in Paragraph 5.04.A;
 - 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 Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then 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 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. 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 Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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;
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.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) 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. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. 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, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, 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, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, 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.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is 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; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, 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, risks, 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 Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights 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 insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *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.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. 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 will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, 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, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will 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.
- C. All materials and equipment must 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.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item 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 is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether 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 other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *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 an 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 will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 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.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. 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 the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *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.

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. 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, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.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 at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer 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).
- E. 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.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as 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.

7.15 *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 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 by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must 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 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, 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.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. 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, comply with the requirements of 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, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.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. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

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.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
- 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 - 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 - 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, or improper modification, 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.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 - 1. Observations by Engineer;
 - 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 review and approval of a Shop Drawing or Sample submittal;
 - 6. The issuance of a notice of acceptability by Engineer;
 - 7. The end of the correction period established in Paragraph 15.08;
 - 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (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 from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused 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.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) 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 7.18.A will 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.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. 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 such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, 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.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all 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 damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

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

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *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.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *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.

10.02 *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 10.07. 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.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, 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, will 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 Contractor under Paragraph 15.06.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 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in 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;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes 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. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *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, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. 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, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will 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 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 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 Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

- B. *Change Proposal Procedures*

- 1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
- 2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

- 3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
- 4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety 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), 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.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
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 in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to 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 Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will 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, which 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 will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of 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, 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.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost 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 performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), 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 include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will 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 communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
 - 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, 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 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 - 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
 - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 5. 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.
 - 6. Expenses incurred in preparing and advancing Claims.
 - 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee*
 - 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
 - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 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 and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash 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, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 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 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.
- B. 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. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. 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.
- D. 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, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- 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 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, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. 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, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then 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, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages 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 pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, 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, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *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, then 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 will 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.

14.07 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 defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or 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, 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 incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. 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 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 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement 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 the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. 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 must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, 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 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, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and 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:
 - a. 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; or
 - b. 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:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. 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 stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. 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; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, 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, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *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 and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, 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.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy 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, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. 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 15.03 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.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *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, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *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, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
- 3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, 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, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* 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 have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written 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. Contractor shall pay all 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 costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. 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.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, 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.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *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 written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and 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);
 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, 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 complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds 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 under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. 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, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. 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. 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; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 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 16.03.
- B. 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, 7 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 are not intended to preclude Contractor from submitting a Change Proposal 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 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract 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.

18.03 *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. 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.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is 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 will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SECTION 00800

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2018 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.

The terms used in these Supplementary Conditions will have the meanings indicated in the General Conditions.

ARTICLE 1 DEFINITIONS AND TERMINOLOGY

SC-1.01.A.39

Delete paragraph A.39 of the General Conditions in its entirety and insert the following in its place:

“39. Specifications--Sections included under Division 1 thru Division 3 of the Project Manual.”

SC-1.01.A.42

Insert the following at the beginning of the definition:

“42. The Work required by the Contract has been completed except for work having a Contract Price of less than one (1) percent of the then adjusted total Contract Price, or”

SC-1.02.G

Add the following paragraph immediately after paragraph 1.02.G of the General Conditions:

“H. He, Him, His, Himself:

Where references are made in the Contract Documents and/or Specifications to the terms “he, him, his, himself,” or variations thereof, these shall be construed as being gender inclusive, and reference the terms “she, her, hers, herself,” or variations thereof as well.”

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01.C

Delete paragraph 2.01.C of the General Conditions in its entirety.

SUPPLEMENTARY CONDITIONS

ARTICLE 5 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.04

Delete paragraph 5.04 of the General Conditions in its entirety and insert the following in its place: “

5.04 Differing Subsurface or Physical Conditions

In accordance with Massachusetts General Laws Chapter 30 Section 39N, “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, 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.”

SC-5.05.A.

Add the following new paragraph immediately after paragraph 5.05.A.5 of the General Conditions:

“6. Contractor’s attention is directed to the requirements of Massachusetts General Law Chapter 82 Section 40, regarding the notification of owners of underground facilities.”

ARTICLE 6 - BONDS AND INSURANCE

SC-6.02.A

In the first sentence of paragraph 6.02.A delete the words “Owner and”.

SC-6.02.A

Add the following sentence immediately after paragraph 6.02.A of the General Conditions:

“Refer to the table in SC-6.03 for these insurance requirements.”

SC-6.02.B

In the first sentence of paragraph 6.02.B delete the words “Owner or”.

SC-6.02.D

Delete paragraph 6.02.D of the General Conditions in its entirety.

SC-6.02.E

Delete paragraph 6.02.F of the General Conditions in its entirety and replace with the following:

“Failure of Owner to demand such certificates or other evidence of the other party’s full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the Contractor’s obligation to obtain and maintain such insurance.”

SC-6.02.L

Delete paragraph 6.02.L of the General Conditions in its entirety.

SC-6.03

The limits of liability for the insurance required by paragraph 6.03 of the General Conditions shall provide the following coverage’s for not less than the following amounts or greater where required by Laws or Regulations:”

No.	Coverage	Amounts
6.03.A	Worker’s Compensation	
	(1) Worker’s Compensation	\$ 100,000
	(2) Employer’s Liability	\$ 500,000 Each Accident \$ 500,000 Disease per Employee
6.03.B and C	Commercial General Liability	
	(1) Bodily Injury	\$1,000,000 Each Occurrence
	(2) Property Damage	\$1,000,000 Each Occurrence

No.	Coverage	Amounts
6.03.D	Automobile Liability	
	(1) Bodily Injury	\$1,000,000 Each Person
	(2) Property Damage	\$1,000,000 Each Accident
6.03.E	Umbrella or Excess Liability	
	(1) Combined Single Limit	\$5,000,000 Each Occurrence \$5,000,000 Annual Aggregate
6.03.F	Contractor's Pollution Liability	
	(1) Combined Single Limit	\$3,000,000 Each Occurrence \$3,000,000 Annual Aggregate
6.03.G	Separate Owner's Protective Liability	
	(1) Bodily Injury	\$1,000,000 Each Occurrence
	(2) Property Damage	\$1,000,000 Each Occurrence \$1,000,000 Annual Aggregate
6.03.H	Professional Liability (if required)	
	(1) Combined Single Limit	\$3,000,000 Per Claim \$3,000,000 Annual Aggregate

SC-6.03.C

Delete paragraph 6.03.C of the General Conditions in its entirety and insert the following in its place:

- “A. Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insured. This insurance shall provide coverage for not less than the amounts stipulated in the table in SC-6.03. A rider on the Contractor's Liability insurance shall not be acceptable. The separate Owner's Protective Liability policy shall include coverage for the respective officers, directors, members, partners employees, agents, consultants, and subcontractors of each and any of all such additional insured; and the insurance afforded to these additional insured shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.”

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES-SC-

7.02.C

Add the following new paragraphs immediately after paragraph 7.02.C of the General Conditions:

- “C. Regular working hours are defined as eight (8) hours per day, Monday through Friday, excluding holidays, between the hours of 7:00 AM and 6:00 PM. Requests to work other than regular working hours shall be submitted to Engineer not less than 48 hours prior to any proposed weekend work or scheduled extended work weeks. Occasional unscheduled overtime on weekdays may be permitted provided two (2) hours notice is given to Engineer.”
- “D. Contractor shall reimburse the Owner for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated in Article SC-7.02.C. At Owner's option, overtime costs may either be deducted from the Contractor's monthly payment request or deducted from the Contractor's retention prior to release of final payment. Overtime costs for the Owner's personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the Engineer or Owner's independent testing laboratory shall be calculated in accordance with the terms of their respective contracts with the Owner.”
- “E. This agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, Public Law 87-581 87th Congress. No Contractor or Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times that persons basic rate of pay for all hours worked in excess of forty hours in such work week.”
- “F. Contractor and Subcontractors shall, insofar as practicable, give preference in the hiring of workers for the Project to qualified local residents with first preference being given to citizens of the United States who have served in the armed forces of the United States and have been honorably discharged therefrom or released from active duty therein.”

SC-7.07.A

Delete paragraph 7.07.A of the General Conditions in its entirety and insert the following in its place:

“A. Contractor shall not employ any Subcontractor, Supplier or other person or organization, (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner may have reasonable objection. Acceptance of any Subcontractor, other person or organization by Owner shall not constitute a waiver of any right of Owner to reject defective Work. Contractor shall not be required to employ any Subcontractor, other person or organization against whom Contractor has reasonable objection.”

SC-7.07.B

Delete paragraph 7.07.B of the General Conditions in its entirety.

SC-7.07.C

Delete paragraph 7.07.C of the General Conditions in its entirety.

SC-7.07.D

Delete paragraph 7.07.D of the General Conditions in its entirety.

SC-7.07.E

Delete paragraph 7.07.E of the General Conditions in its entirety.

SC-7.07.F

Delete paragraph 7.07.F of the General Conditions in its entirety.

SC-7.07.G

Delete paragraph 7.07.G of the General Conditions in its entirety.

SC-7.07J

Add the following language at the end of paragraph 7.07.J of the General Conditions:

“Except as required otherwise by Massachusetts General Law, Chapter 149, Section 44F.”

SC-7.07.L

Add the following language at the end of paragraph 7.07.L of the General Conditions:

“Owner or Engineer may furnish to any such Subcontractor, Supplier or other person or organization, to the extent practicable, information about amounts paid on their behalf to Contractor in accordance with Contractor’s Application for Payment.”

SC-7.07.M

Add the following new paragraph immediately after paragraph 7.07.M of the General Conditions

“N. Contractor shall make payments to Subcontractors in accordance with Massachusetts General Law, Chapter 30, Section 39F.”

SC-7.10.A

Add the following new paragraph immediately after paragraph 7.10.A of the General Conditions:

“B. The materials and supplies to be used in the Work under this Contract are exempt from the Commonwealth of Massachusetts Sales and Use Tax. Contractor shall obtain the proper certificates, maintain the necessary records and otherwise comply with the requirements of Chapter 14 of the Acts of 1966 and any amendments thereto.”

SC-7.11.C

Add the following new paragraph immediately after paragraph 7.11.C of the General Conditions:

“D. 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.”

SC-7.12.A

Add the following new paragraph immediately after paragraph 7.12.A of the General Conditions:

“B. Contractor shall return to Engineer, one set of the Contract Drawings overmarked in colored pencil, showing all changes made during construction and including the location, by dimensions and elevations, of installed equipment, and underground facilities that will become hidden or buried by the construction. This shall include ties to all valves, fittings, couplings, corporations, etc. measured from permanent structures.”

SC-7.18.A

Add the following language at the end of paragraph 7.18.A of the General Conditions:

“If through the acts of neglect on the part of Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the Work, Contractor shall settle with such other Contractor or Subcontractor by agreement or arbitration if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against Owner on account of any damage alleged to have been sustained, Owner shall notify Contractor, who shall indemnify and save harmless Owner against any such claims.”

SC-7.19.E

Add the following new paragraph immediately after paragraph 7.19.G of the General Conditions:

“7.20 Contractor’s Records

A. Contractor shall comply with all applicable provisions of Chapter 30, Section 39R of the Massachusetts General Laws regarding Contractor’s records.”

ARTICLE 9 - OWNER’S RESPONSIBILITIES

SC-9.06

Delete paragraph 9.06 of the General Conditions in its entirety.

ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.06.A

Add the following new paragraph immediately after paragraph 10.06.A of the General Conditions:

"B. In accordance with Massachusetts General Law Chapter 30, Section 39P every contract subject to Section 39M of this Chapter or Section 44A of Chapter 149 which requires the awarding authority, or any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material, or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than thirty-days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty-days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty-day period and the date by which the decision will be made."

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01.B.1

Delete the second sentence in paragraph 13.01.B.1 of the General Conditions and replace it with the following:

"Such employees shall include foremen at the site."

SC-13.02 Allowances

Delete Paragraph 13.02 of the General Conditions its entirety.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.06.A

Add the following new paragraph immediately after paragraph 14.06.A of the General Conditions:

"B. If Owner stops Work under paragraph 14.06.A, Contractor shall not be entitled to any extension of Contract Time or any increase in Contract Price."

SC-14.07.A

In the first sentence of paragraph 14.07.A delete the number "7" and replace with the number "10".

ARTICLE 15 - PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.01.C.1

Delete paragraph 15.01.C.1 of the General Conditions and replace it with the following:

“1. Progress Payments shall be made in accordance with Massachusetts General Laws, Chapter 30, Section 39K.”

SC-15.02.A

Add the two following new paragraphs immediately after paragraph 15.02.A of the General Conditions:

“B. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.”

“C. Contractor shall indemnify and save Owner harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall at Owner’s request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor, either pay unpaid bills, of which Owner has written notice, direct, or withhold from the Contractor’s unpaid compensation, a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged; whereupon payment to Contractor shall be resumed in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon Owner to either Contractor, or Contractor’s Surety. In paying any unpaid bills of the Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.”

SC-15.06.B

Delete paragraph 15.06.B of the General Conditions and replace it with the following:

“1. If, on the basis of Engineer’s observations of the Work during construction and final inspection, and Engineer’s review of the final Application for Payment and accompanying documentation, all 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 indicate in writing Engineer’s recommendation of payment and present the Application for Payment to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of paragraph 15.01. 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. If the Application and accompanying documentation are appropriate as to form and substance, Owner shall in accordance with the Applicable Massachusetts General Law, pay Contractor the amount recommended by the Engineer.”

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

SC-16.01.A

Delete paragraph 16.01.A of the General Conditions in its entirety and insert the following in its place:

"A. Owner may order, at any time and without cause, suspension of the Work in accordance with Massachusetts General Laws, Chapter 30, Section 39O.

SC-16.02.A.4

Add a new paragraph immediately after paragraph 16.02.A.4 of the General Conditions.

“5. If Contractor abandons the Work, or sublets this Contract or any part thereof, 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 – FINAL RESOLUTION OF DISPUTES

SC 17.01.B

Add a new paragraph after paragraph 17.01.B of the General Conditions:

“C. Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings, unless otherwise agreed by Contractor and Owner in writing.”

ARTICLE 18 - MISCELLANEOUS

SC-18.01.A.2

Add the following new paragraph immediately after paragraph 18.01.A.3 of the General Conditions:

“4. Both the address given in the Bid Form upon which this Agreement is founded, and Contractor 's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered. The delivering at the above named places, or depositing in a postpaid wrapper directed to the first-named place, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon Contractor; and the date of said service shall be the date of such delivery or mailing. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor, and delivered to Owner and Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.”

SC-18.07.A

In paragraph 18.07.A, delete the words “state in which the Project is located” and substitute “Commonwealth of Massachusetts”.

SC-18.09

Add the following new paragraph immediately after paragraph 18.09 of the General Conditions:

“SC-18.10 Wage Rates

“A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to employment of labor, and to the schedule of minimum wage rates established in compliance with laws shall be a part of these Contract Documents. A copy of the wage schedule is included in in this Specification (Section 00820 –Attachment A). If after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administering the laws mentioned above.

Such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. Contractor shall notify Owner of Contractor’s intention to employ persons in trades or occupations not classified in sufficient time for Owner to obtain approved rates for such trades or occupations.”

“B. The schedule of wages referred to above are minimum rates only, and Owner will not consider any claims for additional compensation made by Contractor because of payment by Contractor of any wage in excess of the applicable rate contained in these Contract Documents. All disputes in regard to the payment of wages in excess of these specified in the schedule shall be resolved by Contractor.”

SC-18.10

Add the following new paragraph immediately after paragraph 18.10 of the General Conditions:

“SC-18.11 Commonwealth of Massachusetts Provisions”

A. See Chapters 30 and 82 of the Massachusetts General Laws

END OF SECTION

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APPENDIX A
WAGE RATES

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MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

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

Prevailing Wage Rates

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

LAUREN JONES
Secretary

MICHAEL FLANAGAN
Director

Awarding Authority: Town of Nahant
Contract Number: **City/Town:** NAHANT
Description of Work: Approximately 1,100 LF of new 8" DI water main and 1,400 LF of 10" drain in Fox Hill Road Neighborhood.
Job Location: Fox Hill Rd., Castle Rd., Emerald Rd. Nahant MA

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- **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 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, the 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. The annual update requirement is not applicable to 27F "rental of equipment" contracts. **The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.**
- 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 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 a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons 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 DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must 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. For a sample payroll reporting form go to <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$38.95	\$15.07	\$18.67	\$0.00	\$72.69
	06/01/2024	\$39.95	\$15.07	\$18.67	\$0.00	\$73.69
	12/01/2024	\$39.95	\$15.07	\$20.17	\$0.00	\$75.19
	01/01/2025	\$39.95	\$15.57	\$20.17	\$0.00	\$75.69
	06/01/2025	\$40.95	\$15.57	\$20.17	\$0.00	\$76.69
	12/01/2025	\$40.95	\$15.57	\$21.78	\$0.00	\$78.30
	01/01/2026	\$40.95	\$16.17	\$21.78	\$0.00	\$78.90
	06/01/2026	\$41.95	\$16.17	\$21.78	\$0.00	\$79.90
	12/01/2026	\$41.95	\$16.17	\$23.52	\$0.00	\$81.64
	01/01/2027	\$41.95	\$16.77	\$23.52	\$0.00	\$82.24
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$39.02	\$15.07	\$18.67	\$0.00	\$72.76
	06/01/2024	\$40.02	\$15.07	\$18.67	\$0.00	\$73.76
	12/01/2024	\$40.02	\$15.07	\$20.17	\$0.00	\$75.26
	01/01/2025	\$40.02	\$15.57	\$20.17	\$0.00	\$75.76
	06/01/2025	\$41.02	\$15.57	\$20.17	\$0.00	\$76.76
	12/01/2025	\$41.02	\$15.57	\$21.78	\$0.00	\$78.37
	01/01/2026	\$41.02	\$16.17	\$21.78	\$0.00	\$78.97
	06/01/2026	\$42.02	\$16.17	\$21.78	\$0.00	\$79.97
	12/01/2026	\$42.02	\$16.17	\$23.52	\$0.00	\$81.71
	01/01/2027	\$42.02	\$16.77	\$23.52	\$0.00	\$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$39.14	\$15.07	\$18.67	\$0.00	\$72.88
	06/01/2024	\$40.14	\$15.07	\$18.67	\$0.00	\$73.88
	12/01/2024	\$40.14	\$15.07	\$20.17	\$0.00	\$75.38
	01/01/2025	\$40.14	\$15.57	\$20.17	\$0.00	\$75.88
	06/01/2025	\$41.14	\$15.57	\$20.17	\$0.00	\$76.88
	12/01/2025	\$41.14	\$15.57	\$21.78	\$0.00	\$78.49
	01/01/2026	\$41.14	\$16.17	\$21.78	\$0.00	\$79.09
	06/01/2026	\$42.14	\$16.17	\$21.78	\$0.00	\$80.09
	12/01/2026	\$42.14	\$16.17	\$23.52	\$0.00	\$81.83
	01/01/2027	\$42.14	\$16.77	\$23.52	\$0.00	\$82.43
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.61	\$9.65	\$17.14	\$0.00	\$65.40
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	12/01/2023	\$38.61	\$9.65	\$17.14	\$0.00	\$65.40
	06/01/2024	\$39.94	\$9.65	\$17.14	\$0.00	\$66.73
	12/01/2024	\$41.27	\$9.65	\$17.14	\$0.00	\$68.06
	06/01/2025	\$42.66	\$9.65	\$17.14	\$0.00	\$69.45
	12/01/2025	\$44.04	\$9.65	\$17.14	\$0.00	\$70.83
	06/01/2026	\$45.48	\$9.65	\$17.14	\$0.00	\$72.27
	12/01/2026	\$46.92	\$9.65	\$17.14	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2023	\$40.80	\$14.50	\$11.05	\$0.00	\$66.35
	06/01/2024	\$41.80	\$14.50	\$11.05	\$0.00	\$67.35
	12/01/2024	\$42.80	\$14.50	\$11.05	\$0.00	\$68.35
	06/01/2025	\$43.80	\$14.50	\$11.05	\$0.00	\$69.35
	12/01/2025	\$44.80	\$14.50	\$11.05	\$0.00	\$70.35
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
	06/01/2024	\$39.44	\$9.65	\$17.14	\$0.00	\$66.23
	12/01/2024	\$40.77	\$9.65	\$17.14	\$0.00	\$67.56
	06/01/2025	\$42.16	\$9.65	\$17.14	\$0.00	\$68.95
	12/01/2025	\$43.54	\$9.65	\$17.14	\$0.00	\$70.33
	06/01/2026	\$44.98	\$9.65	\$17.14	\$0.00	\$71.77
	12/01/2026	\$46.42	\$9.65	\$17.14	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.33	\$15.00	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.78	\$15.00	\$16.40	\$0.00	\$89.18
	06/01/2025	\$59.08	\$15.00	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.53	\$15.00	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.83	\$15.00	\$16.40	\$0.00	\$93.23
	12/01/2026	\$63.28	\$15.00	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.33	\$15.00	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.78	\$15.00	\$16.40	\$0.00	\$89.18
	06/01/2025	\$59.08	\$15.00	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.53	\$15.00	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.83	\$15.00	\$16.40	\$0.00	\$93.23
	12/01/2026	\$63.28	\$15.00	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.61	\$9.65	\$17.14	\$0.00	\$65.40
	06/01/2024	\$39.94	\$9.65	\$17.14	\$0.00	\$66.73
	12/01/2024	\$41.27	\$9.65	\$17.14	\$0.00	\$68.06
	06/01/2025	\$42.66	\$9.65	\$17.14	\$0.00	\$69.45
	12/01/2025	\$44.04	\$9.65	\$17.14	\$0.00	\$70.83
	06/01/2026	\$45.48	\$9.65	\$17.14	\$0.00	\$72.27
	12/01/2026	\$46.92	\$9.65	\$17.14	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2024	\$48.12	\$7.07	\$20.60	\$0.00	\$75.79

Classification			Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - BOILERMAKER - Local 29								
Effective Date - 01/01/2024								
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	65	\$31.28		\$7.07	\$13.22	\$0.00	\$51.57	
2	65	\$31.28		\$7.07	\$13.22	\$0.00	\$51.57	
3	70	\$33.68		\$7.07	\$14.23	\$0.00	\$54.98	
4	75	\$36.09		\$7.07	\$15.24	\$0.00	\$58.40	
5	80	\$38.50		\$7.07	\$16.25	\$0.00	\$61.82	
6	85	\$40.90		\$7.07	\$17.28	\$0.00	\$65.25	
7	90	\$43.31		\$7.07	\$18.28	\$0.00	\$68.66	
8	95	\$45.71		\$7.07	\$19.32	\$0.00	\$72.10	
Notes:								
Apprentice to Journeyworker Ratio:1:4								
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)			02/01/2024	\$62.40	\$11.49	\$23.59	\$0.00	\$97.48
BRICKLAYERS LOCAL 3 (LYNN)			08/01/2024	\$64.50	\$11.49	\$23.59	\$0.00	\$99.58
			02/01/2025	\$65.80	\$11.49	\$23.59	\$0.00	\$100.88
			08/01/2025	\$67.95	\$11.49	\$23.59	\$0.00	\$103.03
			02/01/2026	\$69.30	\$11.49	\$23.59	\$0.00	\$104.38
			08/01/2026	\$71.50	\$11.49	\$23.59	\$0.00	\$106.58
			02/01/2027	\$72.90	\$11.49	\$23.59	\$0.00	\$107.98

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

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.20	\$11.49	\$23.59	\$0.00	\$66.28
2	60	\$37.44	\$11.49	\$23.59	\$0.00	\$72.52
3	70	\$43.68	\$11.49	\$23.59	\$0.00	\$78.76
4	80	\$49.92	\$11.49	\$23.59	\$0.00	\$85.00
5	90	\$56.16	\$11.49	\$23.59	\$0.00	\$91.24

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.25	\$11.49	\$23.59	\$0.00	\$67.33
2	60	\$38.70	\$11.49	\$23.59	\$0.00	\$73.78
3	70	\$45.15	\$11.49	\$23.59	\$0.00	\$80.23
4	80	\$51.60	\$11.49	\$23.59	\$0.00	\$86.68
5	90	\$58.05	\$11.49	\$23.59	\$0.00	\$93.13

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
OPERATING ENGINEERS LOCAL 4	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN	12/01/2023	\$45.48	\$9.65	\$18.22	\$0.00	\$73.35
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$46.96	\$9.65	\$18.22	\$0.00	\$74.83
	12/01/2024	\$48.43	\$9.65	\$18.22	\$0.00	\$76.30
	06/01/2025	\$49.93	\$9.65	\$18.22	\$0.00	\$77.80
	12/01/2025	\$51.43	\$9.65	\$18.22	\$0.00	\$79.30
	06/01/2026	\$52.98	\$9.65	\$18.22	\$0.00	\$80.85
	12/01/2026	\$54.48	\$9.65	\$18.22	\$0.00	\$82.35

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER	12/01/2023	\$44.33	\$9.65	\$18.22	\$0.00	\$72.20
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2023	\$44.33	\$9.65	\$18.22	\$0.00	\$72.20
	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	09/01/2023	\$45.87	\$9.83	\$19.97	\$0.00	\$75.67
	03/01/2024	\$47.12	\$9.83	\$19.97	\$0.00	\$76.92
	09/01/2024	\$48.37	\$9.83	\$19.97	\$0.00	\$78.17
	03/01/2025	\$49.62	\$9.83	\$19.97	\$0.00	\$79.42
	09/01/2025	\$50.87	\$9.83	\$19.97	\$0.00	\$80.67
	03/01/2026	\$52.12	\$9.83	\$19.97	\$0.00	\$81.92
	09/01/2026	\$53.37	\$9.83	\$19.97	\$0.00	\$83.17
	03/01/2027	\$54.62	\$9.83	\$19.97	\$0.00	\$84.42

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 09/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.94	\$9.83	\$1.73	\$0.00	\$34.50
2	60	\$27.52	\$9.83	\$1.73	\$0.00	\$39.08
3	70	\$32.11	\$9.83	\$14.78	\$0.00	\$56.72
4	75	\$34.40	\$9.83	\$14.78	\$0.00	\$59.01
5	80	\$36.70	\$9.83	\$16.51	\$0.00	\$63.04
6	80	\$36.70	\$9.83	\$16.51	\$0.00	\$63.04
7	90	\$41.28	\$9.83	\$18.24	\$0.00	\$69.35
8	90	\$41.28	\$9.83	\$18.24	\$0.00	\$69.35

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.56	\$9.83	\$1.73	\$0.00	\$35.12
2	60	\$28.27	\$9.83	\$1.73	\$0.00	\$39.83
3	70	\$32.98	\$9.83	\$14.78	\$0.00	\$57.59
4	75	\$35.34	\$9.83	\$14.78	\$0.00	\$59.95
5	80	\$37.70	\$9.83	\$16.51	\$0.00	\$64.04
6	80	\$37.70	\$9.83	\$16.51	\$0.00	\$64.04
7	90	\$42.41	\$9.83	\$18.24	\$0.00	\$70.48
8	90	\$42.41	\$9.83	\$18.24	\$0.00	\$70.48

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80

Step 1&2 \$32.20/ 3&4 \$38.76/ 5&6 \$58.45/ 7&8 \$64.77

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME	10/01/2023	\$25.55	\$7.02	\$4.80	\$0.00	\$37.37
CARPENTERS-ZONE 3 (Wood Frame)	10/01/2024	\$26.65	\$7.02	\$4.80	\$0.00	\$38.47
	10/01/2025	\$27.75	\$7.02	\$4.80	\$0.00	\$39.57
	10/01/2026	\$28.85	\$7.02	\$4.80	\$0.00	\$40.67

All Aspects of New Wood Frame Work

Apprentice - CARPENTER (Wood Frame) - Zone 3

Effective Date - 10/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.33	\$7.02	\$0.00	\$0.00	\$22.35
2	60	\$15.33	\$7.02	\$0.00	\$0.00	\$22.35
3	65	\$16.61	\$7.02	\$1.00	\$0.00	\$24.63
4	70	\$17.89	\$7.02	\$1.00	\$0.00	\$25.91
5	75	\$19.16	\$7.02	\$4.80	\$0.00	\$30.98
6	80	\$20.44	\$7.02	\$4.80	\$0.00	\$32.26
7	85	\$21.72	\$7.02	\$4.80	\$0.00	\$33.54
8	90	\$23.00	\$7.02	\$4.80	\$0.00	\$34.82

Effective Date - 10/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.99	\$7.02	\$0.00	\$0.00	\$23.01
2	60	\$15.99	\$7.02	\$0.00	\$0.00	\$23.01
3	65	\$17.32	\$7.02	\$1.00	\$0.00	\$25.34
4	70	\$18.66	\$7.02	\$1.00	\$0.00	\$26.68
5	75	\$19.99	\$7.02	\$4.80	\$0.00	\$31.81
6	80	\$21.32	\$7.02	\$4.80	\$0.00	\$33.14
7	85	\$22.65	\$7.02	\$4.80	\$0.00	\$34.47
8	90	\$23.99	\$7.02	\$4.80	\$0.00	\$35.81

Notes:
% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$18.52/ 3&4 \$21.07/ 5&6 \$28.70/ 7&8 \$31.26

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING	01/01/2024	\$49.33	\$13.00	\$23.57	\$1.30	\$87.20
BRICKLAYERS LOCAL 3 (LYNN)						

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

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.67	\$13.00	\$15.93	\$0.00	\$53.60
2	60	\$29.60	\$13.00	\$18.57	\$1.30	\$62.47
3	65	\$32.06	\$13.00	\$19.57	\$1.30	\$65.93
4	70	\$34.53	\$13.00	\$20.57	\$1.30	\$69.40
5	75	\$37.00	\$13.00	\$21.57	\$1.30	\$72.87
6	80	\$39.46	\$13.00	\$22.57	\$1.30	\$76.33
7	90	\$44.40	\$13.00	\$23.57	\$1.30	\$82.27

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

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$56.13	\$15.00	\$16.40	\$0.00	\$87.53
	06/01/2024	\$57.45	\$15.00	\$16.40	\$0.00	\$88.85
	12/01/2024	\$58.93	\$15.00	\$16.40	\$0.00	\$90.33
	06/01/2025	\$60.26	\$15.00	\$16.40	\$0.00	\$91.66
	12/01/2025	\$61.73	\$15.00	\$16.40	\$0.00	\$93.13
	06/01/2026	\$63.06	\$15.00	\$16.40	\$0.00	\$94.46
	12/01/2026	\$64.54	\$15.00	\$16.40	\$0.00	\$95.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$35.62	\$15.00	\$16.40	\$0.00	\$67.02
	06/01/2024	\$36.47	\$15.00	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.42	\$15.00	\$16.40	\$0.00	\$68.82
	06/01/2025	\$38.27	\$15.00	\$16.40	\$0.00	\$69.67
	12/01/2025	\$39.22	\$15.00	\$16.40	\$0.00	\$70.62
	06/01/2026	\$40.08	\$15.00	\$16.40	\$0.00	\$71.48
	12/01/2026	\$41.03	\$15.00	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2024	\$56.06	\$9.95	\$23.95	\$0.00	\$89.96
	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$9.95	\$0.00	\$0.00	\$37.98
2	55	\$30.83	\$9.95	\$6.66	\$0.00	\$47.44
3	60	\$33.64	\$9.95	\$7.26	\$0.00	\$50.85
4	65	\$36.44	\$9.95	\$7.87	\$0.00	\$54.26
5	70	\$39.24	\$9.95	\$20.32	\$0.00	\$69.51
6	75	\$42.05	\$9.95	\$20.93	\$0.00	\$72.93
7	80	\$44.85	\$9.95	\$21.53	\$0.00	\$76.33
8	90	\$50.45	\$9.95	\$22.74	\$0.00	\$83.14

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$9.95	\$0.00	\$0.00	\$38.58
2	55	\$31.49	\$9.95	\$6.66	\$0.00	\$48.10
3	60	\$34.36	\$9.95	\$7.26	\$0.00	\$51.57
4	65	\$37.22	\$9.95	\$7.87	\$0.00	\$55.04
5	70	\$40.08	\$9.95	\$20.32	\$0.00	\$70.35
6	75	\$42.95	\$9.95	\$20.93	\$0.00	\$73.83
7	80	\$45.81	\$9.95	\$21.53	\$0.00	\$77.29
8	90	\$51.53	\$9.95	\$22.74	\$0.00	\$84.22

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 2	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 2	12/01/2023	\$45.48	\$9.65	\$18.07	\$0.00	\$73.20
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS LABORERS - ZONE 2	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 2	12/01/2023	\$45.48	\$9.65	\$18.07	\$0.00	\$73.20
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 2	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER LABORERS - ZONE 2	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	09/01/2023	\$61.39	\$13.00	\$21.69	\$0.00	\$96.08
	03/01/2024	\$61.86	\$13.00	\$22.21	\$0.00	\$97.07
	09/01/2024	\$63.78	\$13.00	\$22.26	\$0.00	\$99.04
	03/01/2025	\$64.98	\$13.00	\$22.30	\$0.00	\$100.28
	09/01/2025	\$66.89	\$13.00	\$22.36	\$0.00	\$102.25
	03/01/2026	\$68.09	\$13.00	\$22.39	\$0.00	\$103.48
	09/01/2026	\$70.00	\$13.00	\$22.45	\$0.00	\$105.45
	03/01/2027	\$71.19	\$13.00	\$22.49	\$0.00	\$106.68
	09/01/2027	\$73.11	\$13.00	\$22.54	\$0.00	\$108.65
	03/01/2028	\$74.31	\$13.00	\$22.58	\$0.00	\$109.89

Apprentice - ELECTRICIAN - Local 103

Effective Date - 09/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$24.56	\$13.00	\$0.74	\$0.00	\$38.30
2	40	\$24.56	\$13.00	\$0.74	\$0.00	\$38.30
3	45	\$27.63	\$13.00	\$16.16	\$0.00	\$56.79
4	45	\$27.63	\$13.00	\$16.16	\$0.00	\$56.79
5	50	\$30.70	\$13.00	\$16.66	\$0.00	\$60.36
6	55	\$33.76	\$13.00	\$17.16	\$0.00	\$63.92
7	60	\$36.83	\$13.00	\$17.67	\$0.00	\$67.50
8	65	\$39.90	\$13.00	\$18.17	\$0.00	\$71.07
9	70	\$42.97	\$13.00	\$18.67	\$0.00	\$74.64
10	75	\$46.04	\$13.00	\$19.18	\$0.00	\$78.22

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$24.74	\$13.00	\$0.74	\$0.00	\$38.48
2	40	\$24.74	\$13.00	\$0.74	\$0.00	\$38.48
3	45	\$27.84	\$13.00	\$16.67	\$0.00	\$57.51
4	45	\$27.84	\$13.00	\$16.67	\$0.00	\$57.51
5	50	\$30.93	\$13.00	\$17.17	\$0.00	\$61.10
6	55	\$34.02	\$13.00	\$17.67	\$0.00	\$64.69
7	60	\$37.12	\$13.00	\$18.17	\$0.00	\$68.29
8	65	\$40.21	\$13.00	\$18.68	\$0.00	\$71.89
9	70	\$43.30	\$13.00	\$19.18	\$0.00	\$75.48
10	75	\$46.40	\$13.00	\$19.69	\$0.00	\$79.09

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

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86
ELEVATOR CONSTRUCTORS LOCAL 4						

Classification		Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - ELEVATOR CONSTRUCTOR - Local 4							
Effective Date - 01/01/2022							
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate	
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84	
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33	
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89	
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17	
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74	
<div>Notes: Steps 1-2 are 6 mos.; Steps 3-5 are 1 year</div>							
Apprentice to Journeyworker Ratio:1:1							
ELEVATOR CONSTRUCTOR HELPER		01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
ELEVATOR CONSTRUCTORS LOCAL 4							
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"							
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)		12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
LABORERS - ZONE 2 (HEAVY & HIGHWAY)		06/01/2024	\$39.44	\$9.65	\$17.14	\$0.00	\$66.23
		12/01/2024	\$40.77	\$9.65	\$17.14	\$0.00	\$67.56
		06/01/2025	\$42.16	\$9.65	\$17.14	\$0.00	\$68.95
		12/01/2025	\$43.54	\$9.65	\$17.14	\$0.00	\$70.33
		06/01/2026	\$44.98	\$9.65	\$17.14	\$0.00	\$71.77
		12/01/2026	\$46.42	\$9.65	\$17.14	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY		11/01/2023	\$50.30	\$14.50	\$16.15	\$0.00	\$80.95
OPERATING ENGINEERS LOCAL 4		05/01/2024	\$51.54	\$14.50	\$16.15	\$0.00	\$82.19
		11/01/2024	\$52.83	\$14.50	\$16.15	\$0.00	\$83.48
		05/01/2025	\$54.27	\$14.50	\$16.15	\$0.00	\$84.92
		11/01/2025	\$55.56	\$14.50	\$16.15	\$0.00	\$86.21
		05/01/2026	\$57.00	\$14.50	\$16.15	\$0.00	\$87.65
		11/01/2026	\$58.29	\$14.50	\$16.15	\$0.00	\$88.94
		05/01/2027	\$59.72	\$14.50	\$16.15	\$0.00	\$90.37
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY		11/01/2023	\$51.87	\$14.50	\$16.15	\$0.00	\$82.52
OPERATING ENGINEERS LOCAL 4		05/01/2024	\$53.12	\$14.50	\$16.15	\$0.00	\$83.77
		11/01/2024	\$54.42	\$14.50	\$16.15	\$0.00	\$85.07
		05/01/2025	\$55.87	\$14.50	\$16.15	\$0.00	\$86.52
		11/01/2025	\$57.17	\$14.50	\$16.15	\$0.00	\$87.82
		05/01/2026	\$58.62	\$14.50	\$16.15	\$0.00	\$89.27
		11/01/2026	\$59.92	\$14.50	\$16.15	\$0.00	\$90.57
		05/01/2027	\$61.37	\$14.50	\$16.15	\$0.00	\$92.02
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2023	\$24.93	\$14.50	\$16.15	\$0.00	\$55.58
	05/01/2024	\$25.66	\$14.50	\$16.15	\$0.00	\$56.31
	11/01/2024	\$26.42	\$14.50	\$16.15	\$0.00	\$57.07
	05/01/2025	\$27.27	\$14.50	\$16.15	\$0.00	\$57.92
	11/01/2025	\$28.03	\$14.50	\$16.15	\$0.00	\$58.68
	05/01/2026	\$28.88	\$14.50	\$16.15	\$0.00	\$59.53
	11/01/2026	\$29.64	\$14.50	\$16.15	\$0.00	\$60.29
	05/01/2027	\$30.49	\$14.50	\$16.15	\$0.00	\$61.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	09/01/2023	\$61.39	\$13.00	\$21.69	\$0.00	\$96.08
	03/01/2024	\$61.86	\$13.00	\$22.21	\$0.00	\$97.07
	09/01/2024	\$63.78	\$13.00	\$22.26	\$0.00	\$99.04
	03/01/2025	\$64.98	\$13.00	\$22.30	\$0.00	\$100.28
	09/01/2025	\$66.89	\$13.00	\$22.36	\$0.00	\$102.25
	03/01/2026	\$68.09	\$13.00	\$22.39	\$0.00	\$103.48
	09/01/2026	\$70.00	\$13.00	\$22.45	\$0.00	\$105.45
	03/01/2027	\$71.19	\$13.00	\$22.49	\$0.00	\$106.68
	09/01/2027	\$73.11	\$13.00	\$22.54	\$0.00	\$108.65
	03/01/2028	\$74.31	\$13.00	\$22.58	\$0.00	\$109.89
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE <i>LOCAL 103</i> / COMMISSIONING <i>ELECTRICIANS</i>	09/01/2023	\$49.11	\$13.00	\$19.68	\$0.00	\$81.79
	03/01/2024	\$49.49	\$13.00	\$20.19	\$0.00	\$82.68
	09/01/2024	\$51.02	\$13.00	\$20.24	\$0.00	\$84.26
	03/01/2025	\$51.98	\$13.00	\$20.27	\$0.00	\$85.25
	09/01/2025	\$53.51	\$13.00	\$20.32	\$0.00	\$86.83
	03/01/2026	\$54.47	\$13.00	\$20.34	\$0.00	\$87.81
	09/01/2026	\$56.00	\$13.00	\$20.39	\$0.00	\$89.39
	03/01/2027	\$56.95	\$13.00	\$20.42	\$0.00	\$90.37
	09/01/2027	\$58.49	\$13.00	\$20.46	\$0.00	\$91.95
	03/01/2028	\$59.45	\$13.00	\$20.49	\$0.00	\$92.94
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$44.47	\$15.00	\$16.40	\$0.00	\$75.87
	06/01/2024	\$45.53	\$15.00	\$16.40	\$0.00	\$76.93
	12/01/2024	\$46.71	\$15.00	\$16.40	\$0.00	\$78.11
	06/01/2025	\$47.77	\$15.00	\$16.40	\$0.00	\$79.17
	12/01/2025	\$48.94	\$15.00	\$16.40	\$0.00	\$80.34
	06/01/2026	\$50.00	\$15.00	\$16.40	\$0.00	\$81.40
	12/01/2026	\$51.18	\$15.00	\$16.40	\$0.00	\$82.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	12/01/2023	\$25.48	\$9.65	\$17.14	\$0.00	\$52.27
	06/01/2024	\$26.51	\$9.65	\$17.14	\$0.00	\$53.30
	12/01/2024	\$26.51	\$9.65	\$17.14	\$0.00	\$53.30
	06/01/2025	\$27.59	\$9.65	\$17.14	\$0.00	\$54.38
	12/01/2025	\$27.59	\$9.65	\$17.14	\$0.00	\$54.38
	06/01/2026	\$28.71	\$9.65	\$17.14	\$0.00	\$55.50
	12/01/2026	\$28.71	\$9.65	\$17.14	\$0.00	\$55.50
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FLOORCOVERER	09/01/2023	\$53.48	\$8.83	\$20.27	\$0.00	\$82.58
FLOORCOVERERS LOCAL 2168 ZONE I	03/01/2024	\$54.73	\$8.83	\$20.27	\$0.00	\$83.83
	09/01/2024	\$56.23	\$8.83	\$20.27	\$0.00	\$85.33
	03/01/2025	\$57.73	\$8.83	\$20.27	\$0.00	\$86.83
	09/01/2025	\$59.23	\$8.83	\$20.27	\$0.00	\$88.33
	03/01/2026	\$60.73	\$8.83	\$20.27	\$0.00	\$89.83
	09/01/2026	\$62.23	\$8.83	\$20.27	\$0.00	\$91.33
	03/01/2027	\$63.73	\$8.83	\$20.27	\$0.00	\$92.83

Apprentice - FLOORCOVERER - Local 2168 Zone I

Effective Date - 09/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.74	\$8.83	\$1.76	\$0.00	\$37.33
2	55	\$29.41	\$8.83	\$1.76	\$0.00	\$40.00
3	60	\$32.09	\$8.83	\$3.52	\$0.00	\$44.44
4	65	\$34.76	\$8.83	\$3.52	\$0.00	\$47.11
5	70	\$37.44	\$8.83	\$16.75	\$0.00	\$63.02
6	75	\$40.11	\$8.83	\$16.75	\$0.00	\$65.69
7	80	\$42.78	\$8.83	\$18.51	\$0.00	\$70.12
8	85	\$45.46	\$8.83	\$18.51	\$0.00	\$72.80

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.37	\$8.83	\$1.76	\$0.00	\$37.96
2	55	\$30.10	\$8.83	\$1.76	\$0.00	\$40.69
3	60	\$32.84	\$8.83	\$3.52	\$0.00	\$45.19
4	65	\$35.57	\$8.83	\$3.52	\$0.00	\$47.92
5	70	\$38.31	\$8.83	\$16.75	\$0.00	\$63.89
6	75	\$41.05	\$8.83	\$16.75	\$0.00	\$66.63
7	80	\$43.78	\$8.83	\$18.51	\$0.00	\$71.12
8	85	\$46.52	\$8.83	\$18.51	\$0.00	\$73.86

Notes: Steps are 750 hrs.
% After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
Step 1&2 \$34.65/ 3&4 \$41.76/ 5&6 \$63.02/ 7&8 \$70.12

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
OPERATING ENGINEERS LOCAL 4	06/01/2024	\$56.33	\$15.00	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.78	\$15.00	\$16.40	\$0.00	\$89.18
	06/01/2025	\$59.08	\$15.00	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.53	\$15.00	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.83	\$15.00	\$16.40	\$0.00	\$93.23
	12/01/2026	\$63.28	\$15.00	\$16.40	\$0.00	\$94.68

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$35.62	\$15.00	\$16.40	\$0.00	\$67.02
	06/01/2024	\$36.47	\$15.00	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.42	\$15.00	\$16.40	\$0.00	\$68.82
	06/01/2025	\$38.27	\$15.00	\$16.40	\$0.00	\$69.67
	12/01/2025	\$39.22	\$15.00	\$16.40	\$0.00	\$70.62
	06/01/2026	\$40.08	\$15.00	\$16.40	\$0.00	\$71.48
	12/01/2026	\$41.03	\$15.00	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2024	\$45.56	\$9.95	\$23.95	\$0.00	\$79.46
	07/01/2024	\$46.76	\$9.95	\$23.95	\$0.00	\$80.66
	01/01/2025	\$47.96	\$9.95	\$23.95	\$0.00	\$81.86

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.78	\$9.95	\$0.00	\$0.00	\$32.73
2	55	\$25.06	\$9.95	\$6.66	\$0.00	\$41.67
3	60	\$27.34	\$9.95	\$7.26	\$0.00	\$44.55
4	65	\$29.61	\$9.95	\$7.87	\$0.00	\$47.43
5	70	\$31.89	\$9.95	\$20.32	\$0.00	\$62.16
6	75	\$34.17	\$9.95	\$20.93	\$0.00	\$65.05
7	80	\$36.45	\$9.95	\$21.53	\$0.00	\$67.93
8	90	\$41.00	\$9.95	\$22.74	\$0.00	\$73.69

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$9.95	\$0.00	\$0.00	\$33.33
2	55	\$25.72	\$9.95	\$6.66	\$0.00	\$42.33
3	60	\$28.06	\$9.95	\$7.26	\$0.00	\$45.27
4	65	\$30.39	\$9.95	\$7.87	\$0.00	\$48.21
5	70	\$32.73	\$9.95	\$20.32	\$0.00	\$63.00
6	75	\$35.07	\$9.95	\$20.93	\$0.00	\$65.95
7	80	\$37.41	\$9.95	\$21.53	\$0.00	\$68.89
8	90	\$42.08	\$9.95	\$22.74	\$0.00	\$74.77

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.33	\$15.00	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.78	\$15.00	\$16.40	\$0.00	\$89.18
	06/01/2025	\$59.08	\$15.00	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.53	\$15.00	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.83	\$15.00	\$16.40	\$0.00	\$93.23
	12/01/2026	\$63.28	\$15.00	\$16.40	\$0.00	\$94.68

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$30.27	\$15.00	\$0.00	\$0.00	\$45.27
2	60	\$33.02	\$15.00	\$16.40	\$0.00	\$64.42
3	65	\$35.77	\$15.00	\$16.40	\$0.00	\$67.17
4	70	\$38.52	\$15.00	\$16.40	\$0.00	\$69.92
5	75	\$41.27	\$15.00	\$16.40	\$0.00	\$72.67
6	80	\$44.02	\$15.00	\$16.40	\$0.00	\$75.42
7	85	\$46.78	\$15.00	\$16.40	\$0.00	\$78.18
8	90	\$49.53	\$15.00	\$16.40	\$0.00	\$80.93

Effective Date - 06/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$30.98	\$15.00	\$0.00	\$0.00	\$45.98
2	60	\$33.80	\$15.00	\$16.40	\$0.00	\$65.20
3	65	\$36.61	\$15.00	\$16.40	\$0.00	\$68.01
4	70	\$39.43	\$15.00	\$16.40	\$0.00	\$70.83
5	75	\$42.25	\$15.00	\$16.40	\$0.00	\$73.65
6	80	\$45.06	\$15.00	\$16.40	\$0.00	\$76.46
7	85	\$47.88	\$15.00	\$16.40	\$0.00	\$79.28
8	90	\$50.70	\$15.00	\$16.40	\$0.00	\$82.10

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK)	02/01/2024	\$57.86	\$14.43	\$27.07	\$2.93	\$102.29
SHEETMETAL WORKERS LOCAL 17 - A	08/01/2024	\$59.61	\$14.43	\$27.07	\$2.93	\$104.04
	02/01/2025	\$61.36	\$14.43	\$27.07	\$2.93	\$105.79
	08/01/2025	\$63.21	\$14.43	\$27.07	\$2.93	\$107.64
	02/01/2026	\$65.16	\$14.43	\$27.07	\$2.93	\$109.59
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS)	09/01/2023	\$61.39	\$13.00	\$21.69	\$0.00	\$96.08
ELECTRICIANS LOCAL 103	03/01/2024	\$61.86	\$13.00	\$22.21	\$0.00	\$97.07
	09/01/2024	\$63.78	\$13.00	\$22.26	\$0.00	\$99.04
	03/01/2025	\$64.98	\$13.00	\$22.30	\$0.00	\$100.28
	09/01/2025	\$66.89	\$13.00	\$22.36	\$0.00	\$102.25
	03/01/2026	\$68.09	\$13.00	\$22.39	\$0.00	\$103.48
	09/01/2026	\$70.00	\$13.00	\$22.45	\$0.00	\$105.45
	03/01/2027	\$71.19	\$13.00	\$22.49	\$0.00	\$106.68
	09/01/2027	\$73.11	\$13.00	\$22.54	\$0.00	\$108.65
	03/01/2028	\$74.31	\$13.00	\$22.58	\$0.00	\$109.89
For apprentice rates see "Apprentice- ELECTRICIAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2024	\$57.86	\$14.43	\$27.07	\$2.93	\$102.29
	08/01/2024	\$59.61	\$14.43	\$27.07	\$2.93	\$104.04
	02/01/2025	\$61.36	\$14.43	\$27.07	\$2.93	\$105.79
	08/01/2025	\$63.21	\$14.43	\$27.07	\$2.93	\$107.64
	02/01/2026	\$65.16	\$14.43	\$27.07	\$2.93	\$109.59
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	09/01/2023	\$63.48	\$12.70	\$21.50	\$0.00	\$97.68
	03/01/2024	\$65.28	\$12.70	\$21.50	\$0.00	\$99.48
	09/01/2024	\$67.08	\$12.70	\$21.50	\$0.00	\$101.28
	03/01/2025	\$68.88	\$12.70	\$21.50	\$0.00	\$103.08
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	09/01/2023	\$63.48	\$12.70	\$21.50	\$0.00	\$97.68
	03/01/2024	\$65.28	\$12.70	\$21.50	\$0.00	\$99.48
	09/01/2024	\$67.08	\$12.70	\$21.50	\$0.00	\$101.28
	03/01/2025	\$68.88	\$12.70	\$21.50	\$0.00	\$103.08
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.61	\$9.65	\$17.14	\$0.00	\$65.40
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	12/01/2023	\$38.61	\$9.65	\$17.14	\$0.00	\$65.40
	06/01/2024	\$39.94	\$9.65	\$17.14	\$0.00	\$66.73
	12/01/2024	\$41.27	\$9.65	\$17.14	\$0.00	\$68.06
	06/01/2025	\$42.66	\$9.65	\$17.14	\$0.00	\$69.45
	12/01/2025	\$44.04	\$9.65	\$17.14	\$0.00	\$70.83
	06/01/2026	\$45.48	\$9.65	\$17.14	\$0.00	\$72.27
	12/01/2026	\$46.92	\$9.65	\$17.14	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2023	\$53.50	\$14.75	\$19.61	\$0.00	\$87.86
	09/01/2024	\$56.92	\$14.75	\$19.61	\$0.00	\$91.28
	09/01/2025	\$60.34	\$14.75	\$19.61	\$0.00	\$94.70
	09/01/2026	\$63.76	\$14.75	\$19.61	\$0.00	\$98.12

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

Effective Date - 09/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.75	\$14.75	\$14.32	\$0.00	\$55.82
2	60	\$32.10	\$14.75	\$15.37	\$0.00	\$62.22
3	70	\$37.45	\$14.75	\$16.43	\$0.00	\$68.63
4	80	\$42.80	\$14.75	\$17.49	\$0.00	\$75.04

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.46	\$14.75	\$14.32	\$0.00	\$57.53
2	60	\$34.15	\$14.75	\$15.37	\$0.00	\$64.27
3	70	\$39.84	\$14.75	\$16.43	\$0.00	\$71.02
4	80	\$45.54	\$14.75	\$17.49	\$0.00	\$77.78

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER	03/16/2023	\$52.72	\$8.35	\$26.70	\$0.00	\$87.77
IRONWORKERS LOCAL 7 (BOSTON AREA)	03/16/2024	\$53.97	\$8.35	\$26.70	\$0.00	\$89.02

Apprentice - IRONWORKER - Local 7 Boston

Effective Date - 03/16/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$31.63	\$8.35	\$26.70	\$0.00	\$66.68
2	70	\$36.90	\$8.35	\$26.70	\$0.00	\$71.95
3	75	\$39.54	\$8.35	\$26.70	\$0.00	\$74.59
4	80	\$42.18	\$8.35	\$26.70	\$0.00	\$77.23
5	85	\$44.81	\$8.35	\$26.70	\$0.00	\$79.86
6	90	\$47.45	\$8.35	\$26.70	\$0.00	\$82.50

Effective Date - 03/16/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$32.38	\$8.35	\$26.70	\$0.00	\$67.43
2	70	\$37.78	\$8.35	\$26.70	\$0.00	\$72.83
3	75	\$40.48	\$8.35	\$26.70	\$0.00	\$75.53
4	80	\$43.18	\$8.35	\$26.70	\$0.00	\$78.23
5	85	\$45.87	\$8.35	\$26.70	\$0.00	\$80.92
6	90	\$48.57	\$8.35	\$26.70	\$0.00	\$83.62

Notes:

Apprentice to Journeyworker Ratio:1:4

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
JACKHAMMER & PAVING BREAKER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
LABORER <i>LABORERS - ZONE 2</i>	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65

Apprentice - *LABORER - Zone 2*

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.72	\$9.65	\$16.89	\$0.00	\$49.26
2	70	\$26.50	\$9.65	\$16.89	\$0.00	\$53.04
3	80	\$30.29	\$9.65	\$16.89	\$0.00	\$56.83
4	90	\$34.07	\$9.65	\$16.89	\$0.00	\$60.61

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
	06/01/2024	\$39.19	\$9.65	\$17.14	\$0.00	\$65.98
	12/01/2024	\$40.52	\$9.65	\$17.14	\$0.00	\$67.31
	06/01/2025	\$41.91	\$9.65	\$17.14	\$0.00	\$68.70
	12/01/2025	\$43.29	\$9.65	\$17.14	\$0.00	\$70.08
	06/01/2026	\$44.73	\$9.65	\$17.14	\$0.00	\$71.52
	12/01/2026	\$46.17	\$9.65	\$17.14	\$0.00	\$72.96

Apprentice - *LABORER (Heavy & Highway) - Zone 2*

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.72	\$9.65	\$17.14	\$0.00	\$49.51
2	70	\$26.50	\$9.65	\$17.14	\$0.00	\$53.29
3	80	\$30.29	\$9.65	\$17.14	\$0.00	\$57.08
4	90	\$34.07	\$9.65	\$17.14	\$0.00	\$60.86

Effective Date - 06/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.51	\$9.00	\$16.89	\$0.00	\$49.40
2	70	\$27.43	\$9.00	\$16.89	\$0.00	\$53.32
3	80	\$31.35	\$9.00	\$16.89	\$0.00	\$57.24
4	90	\$35.27	\$9.00	\$16.89	\$0.00	\$61.16

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 2</i>	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.36	\$9.40	\$16.89	\$0.00	\$64.65
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i>	12/01/2023	\$37.95	\$9.65	\$17.20	\$0.00	\$64.80
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
	06/01/2024	\$39.44	\$9.65	\$17.14	\$0.00	\$66.23
	12/01/2024	\$40.77	\$9.65	\$17.14	\$0.00	\$67.56
	06/01/2025	\$42.16	\$9.65	\$17.14	\$0.00	\$68.95
	12/01/2025	\$43.54	\$9.65	\$17.14	\$0.00	\$70.33
	06/01/2026	\$44.98	\$9.65	\$17.14	\$0.00	\$71.77
	12/01/2026	\$46.42	\$9.65	\$17.14	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
	06/01/2024	\$39.44	\$9.65	\$17.14	\$0.00	\$66.23
	12/01/2024	\$40.77	\$9.65	\$17.14	\$0.00	\$67.56
	06/01/2025	\$42.16	\$9.65	\$17.14	\$0.00	\$68.95
	12/01/2025	\$43.54	\$9.65	\$17.14	\$0.00	\$70.33
	06/01/2026	\$44.98	\$9.65	\$17.14	\$0.00	\$71.77
	12/01/2026	\$46.42	\$9.65	\$17.14	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2024	\$47.89	\$11.49	\$21.37	\$0.00	\$80.75
	08/01/2024	\$49.57	\$11.49	\$21.37	\$0.00	\$82.43
	02/01/2025	\$50.61	\$11.49	\$21.37	\$0.00	\$83.47
	08/01/2025	\$52.33	\$11.49	\$21.37	\$0.00	\$85.19
	02/01/2026	\$53.41	\$11.49	\$21.37	\$0.00	\$86.27
	08/01/2026	\$55.17	\$11.49	\$21.37	\$0.00	\$88.03
	02/01/2027	\$56.29	\$11.49	\$21.37	\$0.00	\$89.15

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

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.95	\$11.49	\$21.37	\$0.00	\$56.81
2	60	\$28.73	\$11.49	\$21.37	\$0.00	\$61.59
3	70	\$33.52	\$11.49	\$21.37	\$0.00	\$66.38
4	80	\$38.31	\$11.49	\$21.37	\$0.00	\$71.17
5	90	\$43.10	\$11.49	\$21.37	\$0.00	\$75.96

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.79	\$11.49	\$21.37	\$0.00	\$57.65
2	60	\$29.74	\$11.49	\$21.37	\$0.00	\$62.60
3	70	\$34.70	\$11.49	\$21.37	\$0.00	\$67.56
4	80	\$39.66	\$11.49	\$21.37	\$0.00	\$72.52
5	90	\$44.61	\$11.49	\$21.37	\$0.00	\$77.47

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH	02/01/2024	\$62.42	\$11.49	\$23.56	\$0.00	\$97.47
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2024	\$64.52	\$11.49	\$23.56	\$0.00	\$99.57
	02/01/2025	\$65.82	\$11.49	\$23.56	\$0.00	\$100.87
	08/01/2025	\$67.97	\$11.49	\$23.56	\$0.00	\$103.02
	02/01/2026	\$69.32	\$11.49	\$23.56	\$0.00	\$104.37
	08/01/2026	\$71.52	\$11.49	\$23.56	\$0.00	\$106.57
	02/01/2027	\$72.92	\$11.49	\$23.56	\$0.00	\$107.97

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

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.21	\$11.49	\$23.56	\$0.00	\$66.26
2	60	\$37.45	\$11.49	\$23.56	\$0.00	\$72.50
3	70	\$43.69	\$11.49	\$23.56	\$0.00	\$78.74
4	80	\$49.94	\$11.49	\$23.56	\$0.00	\$84.99
5	90	\$56.18	\$11.49	\$23.56	\$0.00	\$91.23

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.26	\$11.49	\$23.56	\$0.00	\$67.31
2	60	\$38.71	\$11.49	\$23.56	\$0.00	\$73.76
3	70	\$45.16	\$11.49	\$23.56	\$0.00	\$80.21
4	80	\$51.62	\$11.49	\$23.56	\$0.00	\$86.67
5	90	\$58.07	\$11.49	\$23.56	\$0.00	\$93.12

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES)	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
OPERATING ENGINEERS LOCAL 4	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
OPERATING ENGINEERS LOCAL 4	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 1)	01/02/2023	\$47.27	\$8.58	\$21.57	\$0.00	\$77.42
MILLWRIGHTS LOCAL 1121 - Zone 1						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - MILLWRIGHT - Local 1121 Zone 1						
Effective Date - 01/02/2023						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$26.00	\$8.58	\$5.72	\$0.00	\$40.30
2	65	\$30.73	\$8.58	\$17.93	\$0.00	\$57.24
3	75	\$35.45	\$8.58	\$18.98	\$0.00	\$63.01
4	85	\$40.18	\$8.58	\$20.01	\$0.00	\$68.77
Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66) Steps are 2,000 hours						
Apprentice to Journeyworker Ratio:1:4						
MORTAR MIXER LABORERS - ZONE 2	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2023	\$24.41	\$15.00	\$16.40	\$0.00	\$55.81
	06/01/2024	\$25.01	\$15.00	\$16.40	\$0.00	\$56.41
	12/01/2024	\$25.67	\$15.00	\$16.40	\$0.00	\$57.07
	06/01/2025	\$26.27	\$15.00	\$16.40	\$0.00	\$57.67
	12/01/2025	\$26.93	\$15.00	\$16.40	\$0.00	\$58.33
	06/01/2026	\$27.52	\$15.00	\$16.40	\$0.00	\$58.92
	12/01/2026	\$28.19	\$15.00	\$16.40	\$0.00	\$59.59
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2023	\$29.86	\$15.00	\$16.40	\$0.00	\$61.26
	06/01/2024	\$30.58	\$15.00	\$16.40	\$0.00	\$61.98
	12/01/2024	\$31.38	\$15.00	\$16.40	\$0.00	\$62.78
	06/01/2025	\$32.10	\$15.00	\$16.40	\$0.00	\$63.50
	12/01/2025	\$32.90	\$15.00	\$16.40	\$0.00	\$64.30
	06/01/2026	\$33.62	\$15.00	\$16.40	\$0.00	\$65.02
	12/01/2026	\$34.42	\$15.00	\$16.40	\$0.00	\$65.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	01/01/2024	\$56.06	\$9.95	\$23.95	\$0.00	\$89.96
	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$9.95	\$0.00	\$0.00	\$37.98
2	55	\$30.83	\$9.95	\$6.66	\$0.00	\$47.44
3	60	\$33.64	\$9.95	\$7.26	\$0.00	\$50.85
4	65	\$36.44	\$9.95	\$7.87	\$0.00	\$54.26
5	70	\$39.24	\$9.95	\$20.32	\$0.00	\$69.51
6	75	\$42.05	\$9.95	\$20.93	\$0.00	\$72.93
7	80	\$44.85	\$9.95	\$21.53	\$0.00	\$76.33
8	90	\$50.45	\$9.95	\$22.74	\$0.00	\$83.14

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$9.95	\$0.00	\$0.00	\$38.58
2	55	\$31.49	\$9.95	\$6.66	\$0.00	\$48.10
3	60	\$34.36	\$9.95	\$7.26	\$0.00	\$51.57
4	65	\$37.22	\$9.95	\$7.87	\$0.00	\$55.04
5	70	\$40.08	\$9.95	\$20.32	\$0.00	\$70.35
6	75	\$42.95	\$9.95	\$20.93	\$0.00	\$73.83
7	80	\$45.81	\$9.95	\$21.53	\$0.00	\$77.29
8	90	\$51.53	\$9.95	\$22.74	\$0.00	\$84.22

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2024	\$46.96	\$9.95	\$23.95	\$0.00	\$80.86
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.PAINTERS LOCAL 35 - ZONE 2	07/01/2024	\$48.16	\$9.95	\$23.95	\$0.00	\$82.06
	01/01/2025	\$49.36	\$9.95	\$23.95	\$0.00	\$83.26

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

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.48	\$9.95	\$0.00	\$0.00	\$33.43
2	55	\$25.83	\$9.95	\$6.66	\$0.00	\$42.44
3	60	\$28.18	\$9.95	\$7.26	\$0.00	\$45.39
4	65	\$30.52	\$9.95	\$7.87	\$0.00	\$48.34
5	70	\$32.87	\$9.95	\$20.32	\$0.00	\$63.14
6	75	\$35.22	\$9.95	\$20.93	\$0.00	\$66.10
7	80	\$37.57	\$9.95	\$21.53	\$0.00	\$69.05
8	90	\$42.26	\$9.95	\$22.74	\$0.00	\$74.95

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.08	\$9.95	\$0.00	\$0.00	\$34.03
2	55	\$26.49	\$9.95	\$6.66	\$0.00	\$43.10
3	60	\$28.90	\$9.95	\$7.26	\$0.00	\$46.11
4	65	\$31.30	\$9.95	\$7.87	\$0.00	\$49.12
5	70	\$33.71	\$9.95	\$20.32	\$0.00	\$63.98
6	75	\$36.12	\$9.95	\$20.93	\$0.00	\$67.00
7	80	\$38.53	\$9.95	\$21.53	\$0.00	\$70.01
8	90	\$43.34	\$9.95	\$22.74	\$0.00	\$76.03

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2024	\$45.02	\$9.95	\$23.95	\$0.00	\$78.92
PAINTERS LOCAL 35 - ZONE 2	07/01/2024	\$46.22	\$9.95	\$23.95	\$0.00	\$80.12
	01/01/2025	\$47.42	\$9.95	\$23.95	\$0.00	\$81.32

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

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.51	\$9.95	\$0.00	\$0.00	\$32.46
2	55	\$24.76	\$9.95	\$6.66	\$0.00	\$41.37
3	60	\$27.01	\$9.95	\$7.26	\$0.00	\$44.22
4	65	\$29.26	\$9.95	\$7.87	\$0.00	\$47.08
5	70	\$31.51	\$9.95	\$20.32	\$0.00	\$61.78
6	75	\$33.77	\$9.95	\$20.93	\$0.00	\$64.65
7	80	\$36.02	\$9.95	\$21.53	\$0.00	\$67.50
8	90	\$40.52	\$9.95	\$22.74	\$0.00	\$73.21

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.11	\$9.95	\$0.00	\$0.00	\$33.06
2	55	\$25.42	\$9.95	\$6.66	\$0.00	\$42.03
3	60	\$27.73	\$9.95	\$7.26	\$0.00	\$44.94
4	65	\$30.04	\$9.95	\$7.87	\$0.00	\$47.86
5	70	\$32.35	\$9.95	\$20.32	\$0.00	\$62.62
6	75	\$34.67	\$9.95	\$20.93	\$0.00	\$65.55
7	80	\$36.98	\$9.95	\$21.53	\$0.00	\$68.46
8	90	\$41.60	\$9.95	\$22.74	\$0.00	\$74.29

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *	01/01/2024	\$45.56	\$9.95	\$23.95	\$0.00	\$79.46
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.PAINTERS LOCAL 35 - ZONE 2	07/01/2024	\$46.76	\$9.95	\$23.95	\$0.00	\$80.66
	01/01/2025	\$47.96	\$9.95	\$23.95	\$0.00	\$81.86

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.78	\$9.95	\$0.00	\$0.00	\$32.73
2	55	\$25.06	\$9.95	\$6.66	\$0.00	\$41.67
3	60	\$27.34	\$9.95	\$7.26	\$0.00	\$44.55
4	65	\$29.61	\$9.95	\$7.87	\$0.00	\$47.43
5	70	\$31.89	\$9.95	\$20.32	\$0.00	\$62.16
6	75	\$34.17	\$9.95	\$20.93	\$0.00	\$65.05
7	80	\$36.45	\$9.95	\$21.53	\$0.00	\$67.93
8	90	\$41.00	\$9.95	\$22.74	\$0.00	\$73.69

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$9.95	\$0.00	\$0.00	\$33.33
2	55	\$25.72	\$9.95	\$6.66	\$0.00	\$42.33
3	60	\$28.06	\$9.95	\$7.26	\$0.00	\$45.27
4	65	\$30.39	\$9.95	\$7.87	\$0.00	\$48.21
5	70	\$32.73	\$9.95	\$20.32	\$0.00	\$63.00
6	75	\$35.07	\$9.95	\$20.93	\$0.00	\$65.95
7	80	\$37.41	\$9.95	\$21.53	\$0.00	\$68.89
8	90	\$42.08	\$9.95	\$22.74	\$0.00	\$74.77

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2024	\$43.62	\$9.95	\$23.95	\$0.00	\$77.52
PAINTERS LOCAL 35 - ZONE 2	07/01/2024	\$44.82	\$9.95	\$23.95	\$0.00	\$78.72
	01/01/2025	\$46.02	\$9.95	\$23.95	\$0.00	\$79.92

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.81	\$9.95	\$0.00	\$0.00	\$31.76
2	55	\$23.99	\$9.95	\$6.66	\$0.00	\$40.60
3	60	\$26.17	\$9.95	\$7.26	\$0.00	\$43.38
4	65	\$28.35	\$9.95	\$7.87	\$0.00	\$46.17
5	70	\$30.53	\$9.95	\$20.32	\$0.00	\$60.80
6	75	\$32.72	\$9.95	\$20.93	\$0.00	\$63.60
7	80	\$34.90	\$9.95	\$21.53	\$0.00	\$66.38
8	90	\$39.26	\$9.95	\$22.74	\$0.00	\$71.95

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.41	\$9.95	\$0.00	\$0.00	\$32.36
2	55	\$24.65	\$9.95	\$6.66	\$0.00	\$41.26
3	60	\$26.89	\$9.95	\$7.26	\$0.00	\$44.10
4	65	\$29.13	\$9.95	\$7.87	\$0.00	\$46.95
5	70	\$31.37	\$9.95	\$20.32	\$0.00	\$61.64
6	75	\$33.62	\$9.95	\$20.93	\$0.00	\$64.50
7	80	\$35.86	\$9.95	\$21.53	\$0.00	\$67.34
8	90	\$40.34	\$9.95	\$22.74	\$0.00	\$73.03

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
	06/01/2024	\$39.19	\$9.65	\$17.14	\$0.00	\$65.98
	12/01/2024	\$40.52	\$9.65	\$17.14	\$0.00	\$67.31
	06/01/2025	\$41.91	\$9.65	\$17.14	\$0.00	\$68.70
	12/01/2025	\$43.29	\$9.65	\$17.14	\$0.00	\$70.08
	06/01/2026	\$44.73	\$9.65	\$17.14	\$0.00	\$71.52
	12/01/2026	\$46.17	\$9.65	\$17.14	\$0.00	\$72.96

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

PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	01/01/2024	\$38.78	\$15.07	\$18.67	\$0.00	\$72.52
	06/01/2024	\$39.78	\$15.07	\$18.67	\$0.00	\$73.52
	12/01/2024	\$39.78	\$15.07	\$20.17	\$0.00	\$75.02
	01/01/2025	\$39.78	\$15.57	\$20.17	\$0.00	\$75.52
	06/01/2025	\$40.78	\$15.57	\$20.17	\$0.00	\$76.52
	12/01/2025	\$40.78	\$15.57	\$21.78	\$0.00	\$78.13
	01/01/2026	\$40.78	\$16.17	\$21.78	\$0.00	\$78.73
	06/01/2026	\$41.78	\$16.17	\$21.78	\$0.00	\$79.73
	12/01/2026	\$41.78	\$16.17	\$23.52	\$0.00	\$81.47
	01/01/2027	\$41.78	\$16.77	\$23.52	\$0.00	\$82.07

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59

Apprentice - *PILE DRIVER - Local 56 Zone 1*

Effective Date - 08/01/2020

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

Notes:

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

Apprentice to Journeyworker Ratio:1:5

PIPEFITTER & STEAMFITTER <i>PIPEFITTERS LOCAL 537</i>	09/01/2023	\$63.48	\$12.70	\$21.50	\$0.00	\$97.68
	03/01/2024	\$65.28	\$12.70	\$21.50	\$0.00	\$99.48
	09/01/2024	\$67.08	\$12.70	\$21.50	\$0.00	\$101.28
	03/01/2025	\$68.88	\$12.70	\$21.50	\$0.00	\$103.08

Classification			Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - PIPEFITTER - Local 537								
Effective Date - 09/01/2023								
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	40	\$25.39		\$12.70	\$9.05	\$0.00	\$47.14	
2	45	\$28.57		\$12.70	\$21.50	\$0.00	\$62.77	
3	60	\$38.09		\$12.70	\$21.50	\$0.00	\$72.29	
4	70	\$44.44		\$12.70	\$21.50	\$0.00	\$78.64	
5	80	\$50.78		\$12.70	\$21.50	\$0.00	\$84.98	
Effective Date - 03/01/2024								
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	40	\$26.11		\$12.70	\$9.05	\$0.00	\$47.86	
2	45	\$29.38		\$12.70	\$21.50	\$0.00	\$63.58	
3	60	\$39.17		\$12.70	\$21.50	\$0.00	\$73.37	
4	70	\$45.70		\$12.70	\$21.50	\$0.00	\$79.90	
5	80	\$52.22		\$12.70	\$21.50	\$0.00	\$86.42	
Notes:								
** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.								
Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)								
Apprentice to Journeyworker Ratio:**								
PIPELAYER			12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
LABORERS - ZONE 2								
For apprentice rates see "Apprentice- LABORER"								
PIPELAYER (HEAVY & HIGHWAY)			12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
LABORERS - ZONE 2 (HEAVY & HIGHWAY)								
			06/01/2024	\$39.44	\$9.65	\$17.14	\$0.00	\$66.23
			12/01/2024	\$40.77	\$9.65	\$17.14	\$0.00	\$67.56
			06/01/2025	\$42.16	\$9.65	\$17.14	\$0.00	\$68.95
			12/01/2025	\$43.54	\$9.65	\$17.14	\$0.00	\$70.33
			06/01/2026	\$44.98	\$9.65	\$17.14	\$0.00	\$71.77
			12/01/2026	\$46.42	\$9.65	\$17.14	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)								
PLUMBERS & GASFITTERS			09/03/2023	\$66.44	\$14.07	\$18.86	\$0.00	\$99.37
PLUMBERS & GASFITTERS LOCAL 12								
			03/03/2024	\$68.24	\$14.07	\$18.86	\$0.00	\$101.17
			09/01/2024	\$70.04	\$14.07	\$18.86	\$0.00	\$102.97
			03/02/2025	\$71.34	\$14.32	\$19.11	\$0.00	\$104.77

Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 09/03/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.25	\$14.07	\$6.80	\$0.00	\$44.12
2	40	\$26.58	\$14.07	\$7.72	\$0.00	\$48.37
3	55	\$36.54	\$14.07	\$10.51	\$0.00	\$61.12
4	65	\$43.19	\$14.07	\$12.36	\$0.00	\$69.62
5	75	\$49.83	\$14.07	\$14.22	\$0.00	\$78.12

Effective Date - 03/03/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.88	\$14.07	\$6.80	\$0.00	\$44.75
2	40	\$27.30	\$14.07	\$7.72	\$0.00	\$49.09
3	55	\$37.53	\$14.07	\$10.51	\$0.00	\$62.11
4	65	\$44.36	\$14.07	\$12.36	\$0.00	\$70.79
5	75	\$51.18	\$14.07	\$14.22	\$0.00	\$79.47

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic\$69.00, Step5 with lic\$76.87

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.)	09/01/2023	\$63.48	\$12.70	\$21.50	\$0.00	\$97.68
PIPEFITTERS LOCAL 537	03/01/2024	\$65.28	\$12.70	\$21.50	\$0.00	\$99.48
	09/01/2024	\$67.08	\$12.70	\$21.50	\$0.00	\$101.28
	03/01/2025	\$68.88	\$12.70	\$21.50	\$0.00	\$103.08

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
LABORERS - ZONE 2						

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	06/01/2024	\$39.44	\$9.65	\$17.14	\$0.00	\$66.23
	12/01/2024	\$40.77	\$9.65	\$17.14	\$0.00	\$67.56
	06/01/2025	\$42.16	\$9.65	\$17.14	\$0.00	\$68.95
	12/01/2025	\$43.54	\$9.65	\$17.14	\$0.00	\$70.33
	06/01/2026	\$44.98	\$9.65	\$17.14	\$0.00	\$71.77
	12/01/2026	\$46.42	\$9.65	\$17.14	\$0.00	\$73.21

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

POWDERMAN & BLASTER	12/01/2023	\$38.86	\$9.65	\$17.14	\$0.00	\$65.65
LABORERS - ZONE 2						

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	12/01/2023	\$39.36	\$9.40	\$16.89	\$0.00	\$65.65
	06/01/2024	\$40.69	\$9.40	\$16.89	\$0.00	\$66.98
	12/01/2024	\$42.02	\$9.40	\$16.89	\$0.00	\$68.31
	06/01/2025	\$43.41	\$9.40	\$16.89	\$0.00	\$69.70
	12/01/2025	\$44.79	\$9.40	\$16.89	\$0.00	\$71.08
	06/01/2026	\$46.23	\$9.40	\$16.89	\$0.00	\$72.52
	12/01/2026	\$47.67	\$9.40	\$16.89	\$0.00	\$73.96
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.33	\$15.00	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.78	\$15.00	\$16.40	\$0.00	\$89.18
	06/01/2025	\$59.08	\$15.00	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.53	\$15.00	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.83	\$15.00	\$16.40	\$0.00	\$93.23
	12/01/2026	\$63.28	\$15.00	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$35.62	\$15.00	\$16.40	\$0.00	\$67.02
	06/01/2024	\$36.47	\$15.00	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.42	\$15.00	\$16.40	\$0.00	\$68.82
	06/01/2025	\$38.27	\$15.00	\$16.40	\$0.00	\$69.67
	12/01/2025	\$39.22	\$15.00	\$16.40	\$0.00	\$70.62
	06/01/2026	\$40.08	\$15.00	\$16.40	\$0.00	\$71.48
	12/01/2026	\$41.03	\$15.00	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 42 - J.G. MacLeallan (Wakefield)</i>	05/01/2023	\$29.25	\$12.00	\$7.00	\$0.00	\$48.25
	05/01/2024	\$29.50	\$12.00	\$7.00	\$0.00	\$48.50
	05/01/2025	\$30.00	\$12.00	\$7.00	\$0.00	\$49.00
	05/01/2026	\$30.50	\$12.00	\$7.00	\$0.00	\$49.50
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

ROOFER (Inc.Roofing Waterproofing &Roofing Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2024	\$50.03	\$12.78	\$21.45	\$0.00	\$84.26
	08/01/2024	\$51.53	\$12.78	\$21.45	\$0.00	\$85.76
	02/01/2025	\$52.78	\$12.78	\$21.45	\$0.00	\$87.01
	08/01/2025	\$54.28	\$12.78	\$21.45	\$0.00	\$88.51
	02/01/2026	\$55.53	\$12.78	\$21.45	\$0.00	\$89.76

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.02	\$12.78	\$6.21	\$0.00	\$44.01
2	60	\$30.02	\$12.78	\$21.45	\$0.00	\$64.25
3	65	\$32.52	\$12.78	\$21.45	\$0.00	\$66.75
4	75	\$37.52	\$12.78	\$21.45	\$0.00	\$71.75
5	85	\$42.53	\$12.78	\$21.45	\$0.00	\$76.76

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.77	\$12.78	\$6.21	\$0.00	\$44.76
2	60	\$30.92	\$12.78	\$21.45	\$0.00	\$65.15
3	65	\$33.49	\$12.78	\$21.45	\$0.00	\$67.72
4	75	\$38.65	\$12.78	\$21.45	\$0.00	\$72.88
5	85	\$43.80	\$12.78	\$21.45	\$0.00	\$78.03

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

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 33</i>	02/01/2024	\$50.28	\$12.78	\$21.45	\$0.00	\$84.51
	08/01/2024	\$51.78	\$12.78	\$21.45	\$0.00	\$86.01
	02/01/2025	\$53.03	\$12.78	\$21.45	\$0.00	\$87.26
	08/01/2025	\$54.53	\$12.78	\$21.45	\$0.00	\$88.76
	02/01/2026	\$55.78	\$12.78	\$21.45	\$0.00	\$90.01

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2024	\$57.86	\$14.43	\$27.07	\$2.93	\$102.29
	08/01/2024	\$59.61	\$14.43	\$27.07	\$2.93	\$104.04
	02/01/2025	\$61.36	\$14.43	\$27.07	\$2.93	\$105.79
	08/01/2025	\$63.21	\$14.43	\$27.07	\$2.93	\$107.64
	02/01/2026	\$65.16	\$14.43	\$27.07	\$2.93	\$109.59

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$24.30	\$14.43	\$6.13	\$0.00	\$44.86
2	42	\$24.30	\$14.43	\$6.13	\$0.00	\$44.86
3	47	\$27.19	\$14.43	\$12.11	\$1.61	\$55.34
4	47	\$27.19	\$14.43	\$12.11	\$1.61	\$55.34
5	52	\$30.09	\$14.43	\$13.09	\$1.73	\$59.34
6	52	\$30.09	\$14.43	\$13.34	\$1.73	\$59.59
7	60	\$34.72	\$14.43	\$14.75	\$1.92	\$65.82
8	65	\$37.61	\$14.43	\$15.73	\$2.03	\$69.80
9	75	\$43.40	\$14.43	\$17.69	\$2.27	\$77.79
10	85	\$49.18	\$14.43	\$19.15	\$2.48	\$85.24

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$25.04	\$14.43	\$6.13	\$0.00	\$45.60
2	42	\$25.04	\$14.43	\$6.13	\$0.00	\$45.60
3	47	\$28.02	\$14.43	\$12.11	\$1.64	\$56.20
4	47	\$28.02	\$14.43	\$12.11	\$1.64	\$56.20
5	52	\$31.00	\$14.43	\$13.09	\$1.76	\$60.28
6	52	\$31.00	\$14.43	\$13.34	\$1.76	\$60.53
7	60	\$35.77	\$14.43	\$14.75	\$1.95	\$66.90
8	65	\$38.75	\$14.43	\$15.73	\$2.07	\$70.98
9	75	\$44.71	\$14.43	\$17.69	\$2.30	\$79.13
10	85	\$50.67	\$14.43	\$19.15	\$2.53	\$86.78

Notes:

Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS	01/01/2024	\$39.24	\$15.07	\$18.67	\$0.00	\$72.98
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	06/01/2024	\$40.24	\$15.07	\$18.67	\$0.00	\$73.98
	12/01/2024	\$40.24	\$15.07	\$20.17	\$0.00	\$75.48
	01/01/2025	\$40.24	\$15.57	\$20.17	\$0.00	\$75.98
	06/01/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$76.98
	12/01/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$78.59
	01/01/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$79.19
	06/01/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$80.19
	12/01/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$81.93
	01/01/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$82.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$39.53	\$15.07	\$18.67	\$0.00	\$73.27
	06/01/2024	\$40.53	\$15.07	\$18.67	\$0.00	\$74.27
	12/01/2024	\$40.53	\$15.07	\$20.17	\$0.00	\$75.77
	01/01/2025	\$40.53	\$15.57	\$20.17	\$0.00	\$76.27
	06/01/2025	\$41.53	\$15.57	\$20.17	\$0.00	\$77.27
	12/01/2025	\$41.53	\$15.57	\$21.78	\$0.00	\$78.88
	01/01/2026	\$41.53	\$16.17	\$21.78	\$0.00	\$79.48
	06/01/2026	\$42.53	\$16.17	\$21.78	\$0.00	\$80.48
	12/01/2026	\$42.53	\$16.17	\$23.52	\$0.00	\$82.22
	01/01/2027	\$42.53	\$16.77	\$23.52	\$0.00	\$82.82
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	10/01/2023	\$67.95	\$10.90	\$23.20	\$0.00	\$102.05
	03/01/2024	\$69.75	\$10.90	\$23.20	\$0.00	\$103.85
	10/01/2024	\$71.55	\$10.90	\$23.20	\$0.00	\$105.65
	03/01/2025	\$73.35	\$10.90	\$23.20	\$0.00	\$107.45

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

Effective Date - 10/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.78	\$10.90	\$12.80	\$0.00	\$47.48
2	40	\$27.18	\$10.90	\$13.60	\$0.00	\$51.68
3	45	\$30.58	\$10.90	\$14.40	\$0.00	\$55.88
4	50	\$33.98	\$10.90	\$15.20	\$0.00	\$60.08
5	55	\$37.37	\$10.90	\$16.00	\$0.00	\$64.27
6	60	\$40.77	\$10.90	\$16.80	\$0.00	\$68.47
7	65	\$44.17	\$10.90	\$17.60	\$0.00	\$72.67
8	70	\$47.57	\$10.90	\$18.40	\$0.00	\$76.87
9	75	\$50.96	\$10.90	\$19.20	\$0.00	\$81.06
10	80	\$54.36	\$10.90	\$20.00	\$0.00	\$85.26

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$24.41	\$10.90	\$12.80	\$0.00	\$48.11
2	40	\$27.90	\$10.90	\$13.60	\$0.00	\$52.40
3	45	\$31.39	\$10.90	\$14.40	\$0.00	\$56.69
4	50	\$34.88	\$10.90	\$15.20	\$0.00	\$60.98
5	55	\$38.36	\$10.90	\$16.00	\$0.00	\$65.26
6	60	\$41.85	\$10.90	\$16.80	\$0.00	\$69.55
7	65	\$45.34	\$10.90	\$17.60	\$0.00	\$73.84
8	70	\$48.83	\$10.90	\$18.40	\$0.00	\$78.13
9	75	\$52.31	\$10.90	\$19.20	\$0.00	\$82.41
10	80	\$55.80	\$10.90	\$20.00	\$0.00	\$86.70

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

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
OPERATING ENGINEERS LOCAL 4	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	09/01/2023	\$49.11	\$13.00	\$19.68	\$0.00	\$81.79
	03/01/2024	\$49.49	\$13.00	\$20.19	\$0.00	\$82.68
	09/01/2024	\$51.02	\$13.00	\$20.24	\$0.00	\$84.26
	03/01/2025	\$51.98	\$13.00	\$20.27	\$0.00	\$85.25
	09/01/2025	\$53.51	\$13.00	\$20.32	\$0.00	\$86.83
	03/01/2026	\$54.47	\$13.00	\$20.34	\$0.00	\$87.81
	09/01/2026	\$56.00	\$13.00	\$20.39	\$0.00	\$89.39
	03/01/2027	\$56.95	\$13.00	\$20.42	\$0.00	\$90.37
	09/01/2027	\$58.49	\$13.00	\$20.46	\$0.00	\$91.95
	03/01/2028	\$59.45	\$13.00	\$20.49	\$0.00	\$92.94

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 09/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$22.10	\$13.00	\$0.66	\$0.00	\$35.76
2	45	\$22.10	\$13.00	\$0.66	\$0.00	\$35.76
3	50	\$24.56	\$13.00	\$15.66	\$0.00	\$53.22
4	50	\$24.56	\$13.00	\$15.66	\$0.00	\$53.22
5	55	\$27.01	\$13.00	\$16.06	\$0.00	\$56.07
6	60	\$29.47	\$13.00	\$16.46	\$0.00	\$58.93
7	65	\$31.92	\$13.00	\$16.87	\$0.00	\$61.79
8	70	\$34.38	\$13.00	\$17.27	\$0.00	\$64.65
9	75	\$36.83	\$13.00	\$17.67	\$0.00	\$67.50
10	80	\$39.29	\$13.00	\$18.07	\$0.00	\$70.36

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$22.27	\$13.00	\$0.67	\$0.00	\$35.94
2	45	\$22.27	\$13.00	\$0.67	\$0.00	\$35.94
3	50	\$24.75	\$13.00	\$16.16	\$0.00	\$53.91
4	50	\$24.75	\$13.00	\$16.16	\$0.00	\$53.91
5	55	\$27.22	\$13.00	\$16.57	\$0.00	\$56.79
6	60	\$29.69	\$13.00	\$16.97	\$0.00	\$59.66
7	65	\$32.17	\$13.00	\$17.38	\$0.00	\$62.55
8	70	\$34.64	\$13.00	\$17.78	\$0.00	\$65.42
9	75	\$37.12	\$13.00	\$18.18	\$0.00	\$68.30
10	80	\$39.59	\$13.00	\$18.58	\$0.00	\$71.17

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS	02/01/2024	\$61.34	\$11.49	\$23.59	\$0.00	\$96.42
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2024	\$63.44	\$11.49	\$23.59	\$0.00	\$98.52
	02/01/2025	\$64.74	\$11.49	\$23.59	\$0.00	\$99.82
	08/01/2025	\$66.89	\$11.49	\$23.59	\$0.00	\$101.97
	02/01/2026	\$68.24	\$11.49	\$23.59	\$0.00	\$103.32
	08/01/2026	\$70.44	\$11.49	\$23.59	\$0.00	\$105.52
	02/01/2027	\$71.84	\$11.49	\$23.59	\$0.00	\$106.92

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.67	\$11.49	\$23.59	\$0.00	\$65.75
2	60	\$36.80	\$11.49	\$23.59	\$0.00	\$71.88
3	70	\$42.94	\$11.49	\$23.59	\$0.00	\$78.02
4	80	\$49.07	\$11.49	\$23.59	\$0.00	\$84.15
5	90	\$55.21	\$11.49	\$23.59	\$0.00	\$90.29

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.72	\$11.49	\$23.59	\$0.00	\$66.80
2	60	\$38.06	\$11.49	\$23.59	\$0.00	\$73.14
3	70	\$44.41	\$11.49	\$23.59	\$0.00	\$79.49
4	80	\$50.75	\$11.49	\$23.59	\$0.00	\$85.83
5	90	\$57.10	\$11.49	\$23.59	\$0.00	\$92.18

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER	12/01/2023	\$48.33	\$9.65	\$18.22	\$0.00	\$76.20
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$49.81	\$9.65	\$18.22	\$0.00	\$77.68
	12/01/2024	\$51.28	\$9.65	\$18.22	\$0.00	\$79.15
	06/01/2025	\$52.78	\$9.65	\$18.22	\$0.00	\$80.65
	12/01/2025	\$54.28	\$9.65	\$18.22	\$0.00	\$82.15
	06/01/2026	\$55.83	\$9.65	\$18.22	\$0.00	\$83.70
	12/01/2026	\$57.33	\$9.65	\$18.22	\$0.00	\$85.20
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER	12/01/2023	\$44.45	\$9.65	\$18.22	\$0.00	\$72.32
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$45.93	\$9.65	\$18.22	\$0.00	\$73.80
	12/01/2024	\$47.40	\$9.65	\$18.22	\$0.00	\$75.27
	06/01/2025	\$48.90	\$9.65	\$18.22	\$0.00	\$76.77
	12/01/2025	\$50.40	\$9.65	\$18.22	\$0.00	\$78.27
	06/01/2026	\$51.95	\$9.65	\$18.22	\$0.00	\$79.82
	12/01/2026	\$53.45	\$9.65	\$18.22	\$0.00	\$81.32
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER	12/01/2023	\$44.33	\$9.65	\$18.22	\$0.00	\$72.20
LABORERS - FOUNDATION AND MARINE	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$54.43	\$15.00	\$16.40	\$0.00	\$85.83
	06/01/2024	\$55.71	\$15.00	\$16.40	\$0.00	\$87.11
	12/01/2024	\$57.15	\$15.00	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.43	\$15.00	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.87	\$15.00	\$16.40	\$0.00	\$91.27
	06/01/2026	\$61.15	\$15.00	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.59	\$15.00	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$39.82	\$15.07	\$18.67	\$0.00	\$73.56
	06/01/2024	\$40.82	\$15.07	\$18.67	\$0.00	\$74.56
	12/01/2024	\$40.82	\$15.07	\$20.17	\$0.00	\$76.06
	01/01/2025	\$40.82	\$15.57	\$20.17	\$0.00	\$76.56
	06/01/2025	\$41.82	\$15.57	\$20.17	\$0.00	\$77.56
	12/01/2025	\$41.82	\$15.57	\$21.78	\$0.00	\$79.17
	01/01/2026	\$41.82	\$16.17	\$21.78	\$0.00	\$79.77
	06/01/2026	\$42.82	\$16.17	\$21.78	\$0.00	\$80.77
	12/01/2026	\$42.82	\$16.17	\$23.52	\$0.00	\$82.51
	01/01/2027	\$42.82	\$16.77	\$23.52	\$0.00	\$83.11
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2023	\$56.56	\$9.65	\$18.67	\$0.00	\$84.88
	06/01/2024	\$58.04	\$9.65	\$18.67	\$0.00	\$86.36
	12/01/2024	\$59.51	\$9.65	\$18.67	\$0.00	\$87.83
	06/01/2025	\$61.01	\$9.65	\$18.67	\$0.00	\$89.33
	12/01/2025	\$62.51	\$9.65	\$18.67	\$0.00	\$90.83
	06/01/2026	\$64.06	\$9.65	\$18.67	\$0.00	\$92.38
	12/01/2026	\$65.56	\$9.65	\$18.67	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2023	\$58.56	\$9.65	\$18.67	\$0.00	\$86.88
	06/01/2024	\$60.04	\$9.65	\$18.67	\$0.00	\$88.36
	12/01/2024	\$61.51	\$9.65	\$18.67	\$0.00	\$89.83
	06/01/2025	\$63.01	\$9.65	\$18.67	\$0.00	\$91.33
	12/01/2025	\$64.51	\$9.65	\$18.67	\$0.00	\$92.83
	06/01/2026	\$66.06	\$9.65	\$18.67	\$0.00	\$94.38
	12/01/2026	\$67.56	\$9.65	\$18.67	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2023	\$48.63	\$9.65	\$18.67	\$0.00	\$76.95
	06/01/2024	\$50.11	\$9.65	\$18.67	\$0.00	\$78.43
	12/01/2024	\$51.58	\$9.65	\$18.67	\$0.00	\$79.90
	06/01/2025	\$53.08	\$9.65	\$18.67	\$0.00	\$81.40
	12/01/2025	\$54.58	\$9.65	\$18.67	\$0.00	\$82.90
	06/01/2026	\$56.13	\$9.65	\$18.67	\$0.00	\$84.45
	12/01/2026	\$57.63	\$9.65	\$18.67	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2023	\$50.63	\$9.65	\$18.67	\$0.00	\$78.95
	06/01/2024	\$52.11	\$9.65	\$18.67	\$0.00	\$80.43
	12/01/2024	\$53.58	\$9.65	\$18.67	\$0.00	\$81.90
	06/01/2025	\$55.08	\$9.65	\$18.67	\$0.00	\$83.40
	12/01/2025	\$56.58	\$9.65	\$18.67	\$0.00	\$84.90
	06/01/2026	\$58.13	\$9.65	\$18.67	\$0.00	\$86.45
	12/01/2026	\$59.63	\$9.65	\$18.67	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	01/01/2024	\$39.24	\$15.07	\$18.67	\$0.00	\$72.98
	06/01/2024	\$40.24	\$15.07	\$18.67	\$0.00	\$73.98
	12/01/2024	\$40.24	\$15.07	\$20.17	\$0.00	\$75.48
	01/01/2025	\$40.24	\$15.57	\$20.17	\$0.00	\$75.98
	06/01/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$76.98
	12/01/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$78.59
	01/01/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$79.19
	06/01/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$80.19
	12/01/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$81.93
	01/01/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$82.53
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
	For apprentice rates see "Apprentice- LABORER"					
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
	06/01/2024	\$39.44	\$9.65	\$17.14	\$0.00	\$66.23
	12/01/2024	\$40.77	\$9.65	\$17.14	\$0.00	\$67.56
	06/01/2025	\$42.16	\$9.65	\$17.14	\$0.00	\$68.95
	12/01/2025	\$43.54	\$9.65	\$17.14	\$0.00	\$70.33
	06/01/2026	\$44.98	\$9.65	\$17.14	\$0.00	\$71.77
	12/01/2026	\$46.42	\$9.65	\$17.14	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2023	\$55.03	\$15.00	\$16.40	\$0.00	\$86.43
	06/01/2024	\$56.33	\$15.00	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.78	\$15.00	\$16.40	\$0.00	\$89.18
	06/01/2025	\$59.08	\$15.00	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.53	\$15.00	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.83	\$15.00	\$16.40	\$0.00	\$93.23
	12/01/2026	\$63.28	\$15.00	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	09/03/2023	\$66.44	\$14.07	\$18.86	\$0.00	\$99.37
	03/03/2024	\$68.24	\$14.07	\$18.86	\$0.00	\$101.17
	09/01/2024	\$70.04	\$14.07	\$18.86	\$0.00	\$102.97
	03/02/2025	\$71.34	\$14.32	\$19.11	\$0.00	\$104.77
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

Additional Apprentice Information:

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

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

All steps are six months (1000 hours.)
Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

- ** Multiple ratios are listed in the comment field.
- *** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
- **** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of this Contract generally consists of approximately 1,100 linear feet of new 8-inch diameter ductile iron water main in Fox Hill Road, including replacement of associated gate valves, hydrants, service connections, fittings and appurtenances, replacement and extension of approximately 13 water services in Emerald Road from a 4-inch main to an existing 10-inch main and abandonment of approximately 950 linear feet 4-inch main in Emerald Road, and construction of 625 linear feet of new drainage in Castle Road and Ward Road and 240 linear feet in Fox Hill Road. The project includes Additive Alternative A for replacement of approximately 440 linear feet of new 10-inch drainage, including replacement of catch basins and drain manholes in Castle Road.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

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SECTION 01013

FACILITY INTERFERENCE WITH PROPOSED WORK

PART 1 GENERAL

1.1 LOCATION OF UNDERGROUND FACILITIES

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

1.2 RELATED WORK

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

1.3 PIPE LOCATIONS

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

1.4 PROTECTION OF UNDERGROUND FACILITIES AND DAMAGES THERETO

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

1.5 CONDITION OF EXISTING FACILITIES

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

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION

3.1 INTERFERENCE AND RELOCATION OF FACILITIES

A. INTERFERENCE BY UTILITIES

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

3.2 INTERFERENCE COSTS AND CLAIMS

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

1. The facility is not shown on the Drawings.
2. The facility is shown but the facility is found in a location substantially different from the location shown.
3. The Contractor has necessarily incurred additional cost because of the interference.
4. In general, claims will not be considered for cross trench service connections which are not shown on the Drawings or incorrectly shown.
5. It is routine and customary in work of this kind to encounter subsurface or other conditions which require changes in pipe line grade, alignment and/or relocation of facilities or other adjustments which may necessitate rescheduling of the Contractor's work. The Contractor should allow contingency in his bid for schedule adjustments commonly encountered.
6. The Engineer shall in general not approve claims for delay because of changes in alignment or rescheduling of construction.

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

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

3.3 RELOCATION OF FACILITIES

- A. Relocation of facilities is required:
 - 1. Where indicated on the Drawings.
 - 2. When a 3-inch or less vertical and horizontal separation cannot be achieved between the existing facility and the new pipe line.
 - 3. To comply with minimum water/sewer separation.
 - 4. To comply with minimum requirements of the utility owner.
 - 5. Relocation may be avoided in certain cases by line and grade adjustments.
- B. Existing facilities shall not be disturbed until the facility owner and the Engineer agree to the arrangements and the Engineer requests the relocation to proceed in writing.
 - 1. If the owners of the facilities permit, and the Engineer so requests, the Contractor shall do the whole or any portion of the relocation work.
 - 2. Relocation of facilities will generally be by new pipe and appurtenances, approved and furnished by the facility owner, except where it is feasible in the opinion of the Engineer and facility owner to utilize existing materials.
 - 3. If so requested by the facility owner, the Engineer may direct the Contractor to furnish the material.
 - 4. All removed materials remain the property of the facility owner.

3.4 RELOCATION COSTS AND CLAIMS

- A. All costs of temporary relocations for the Contractor's convenience shall be borne by the Contractor.
- B. Relocation costs for all facilities specified on the Drawings to be relocated shall be the responsibility of the Contractor and be included in the Contractor's bid prices, including those specifically for facility relocations, if such are included.
- C. Relocation costs for privately owned utilities for which relocation is required by the work of this Contract, will not be approved by the Engineer for payment as Extra Work.

3.5 PRIVATE FACILITY COMPANY CLAIM DISTINCTIONS

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

3.6 FACILITY SERVICE CONNECTIONS AND WORK

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

END OF SECTION

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SECTION 01019

DRAWINGS

PART 1 GENERAL

1.1 DESCRIPTION

- A. The Contract Drawings may be modified by addenda and shall be issued for construction purposes.
 - 1. These Drawings may be supplemented or superseded by such additional general and detail drawings as may be necessary and desirable as the work progresses.
 - 2. The Drawings issued for construction at that time or after the signing of the Contract Documents shall become the Contract Drawings.
- B. Dimensions:
 - 1. Except where noted, the Drawings are made to scale, but all working dimensions shall be taken from the figured dimensions or by actual measurements at the work, and in no case by scaling the prints.
 - 2. The Contractor shall study and compare all Drawings and verify all figures before laying out or constructing the work and shall be responsible for any and all errors in the Contract work which might have been avoided thereby.
 - 3. The Contractor shall take all measurements of existing established conditions notwithstanding the figured dimensions on the Drawings.
 - 4. When figured dimensions are not in agreement with the Contractor's measurements, the Engineer shall be immediately notified and the Engineer will promptly adjust the same.
 - 5. Whether or not an error is believed to exist, deviations from the Drawings and the dimensions given thereon shall be made only after approval in writing is obtained from the Engineer.
- C. Diagrammatic Drawings:
 - 1. Plans or Drawings where the work is shown diagrammatically indicate approved working systems. Every piece of material, fittings, fixtures or small equipment is not shown, nor every difficulty or interference that may be encountered to carry out the true intent and purpose of the Contract Documents.

DRAWINGS

2. All necessary parts to make complete, approved working systems or installation shall be included as if detailed on these Drawings.
3. The location of pipelines and appurtenances shown on the Drawings, unless exactly dimensioned, shall be considered as approximate only.
4. The Contractor shall adjust the position of the pipelines and appurtenances in accordance with good working practices to meet interferences, provide proper clearance and provide proper access space for operation and maintenance.

D. Typical Details:

1. Where shown on the Drawings, typical details shall apply to each and every item of the Contract work where such items are incorporated, and the detail is applicable.
2. Unless noted otherwise, such typical details shall be applicable in full.

END OF SECTION

SECTION 01020

ALTERNATIVES

PART 1 GENERAL

1.1 DESCRIPTION

- A. Provide alternate Bids as described in this Section.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 00300 - Bid Form
- B. Section 01025 - Measurement and Payment, Drain Bid

1.3 PROCEDURES

- A. Provide alternate bid to be added to the amounts of the Base Bid if the corresponding changes in scope is accepted by the Owner.
- B. Include within the alternate bid price all costs, including materials, installation, and fees.
- C. Show the proposed alternate amount opposite its proper description on the BID FORM.

1.4 SELECTION OF ALTERNATES

- A. The addition or deletion of work associated with each alternate will depend on the Owner's available funding for the project.
- B. Additive alternates will be added to the base bid in the order in which they appear on the bid form.
- C. Deductive alternates will be deducted from the base bid in the order they appear on the bid form.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

ALTERNATIVES

01020 - 1

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SECTION 01024

MEASUREMENT AND PAYMENT, WATER BID

PART 1 GENERAL

1.1 SUMMARY

- A. Under the price specified to be paid for each item, the Contractor shall furnish all materials and equipment, furnish all labor and plant, and perform all operations to complete all work as indicated and specified. Provide all supervision, overhead items, protection and precautions, and all other costs, incidental to the construction work, complete, and as specified.
- B. A complete working job shall be produced whether or not any particular working or direction is omitted or not clearly stated.
- C. Measurement for payment shall be by the Engineer, except where noted elsewhere in the specification. Measurement for payment for lump sum items shall be on the basis of percentage of work complete as determined by the Contractor's approved schedule of values.
- D. Measurement for payment is the same for items in the base bid and the alternate bids. The descriptions are the same, so it is not repeated in this section for each Alternate. Alternate bid A pay items will have an "-A".
- E. Each price in the Bid shall constitute full compensation for each item of work completed.
- F. The prices for those items which involve excavation or demolition shall include compensation for transportation and disposal of surplus excavated or demolished material.
- G. The prices for all pipe items shall constitute full compensation for pipe, bedding material, laying, jointing, and testing of pipe, excavation, backfill, compaction, dewatering, excavation support, and clean up.
- H. In all items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price thereof shall be in addition to the cost of excavating earth, and no deduction will be made in the amount for earth excavation.
- I. Unit prices submitted for various items of work will be utilized for determining prices of any additional work necessary during construction.

- J. The Contactor is to assume costs for all items and tests required in the Drawings and Specifications but not specifically itemized within the Measurement and Payment Section. These include, but are not limited to:
1. Compaction Testing;
 2. Construction Photographs;
 3. Certificate of Design;
 4. Construction Dewatering, Characterization, Treatment and Disposal;
 5. Obtaining all construction permits required by the Town of Nahant, DEP or other agency;
 6. Pruning and Protection of Trees and Shrubs;
 7. Shop Drawing, Work Plan, and sequencing plan Submittals to those required before and paid under Mobilization;
 8. Concrete Testing as Required;
 9. Maintenance of Existing Flows and By-Pass Pumping
 10. Cleaning and Pressure / Leakage Testing and Disinfection of the Water Main and its Appurtenances.
 11. Capping of and abandonment (in-place) or the removal and disposal of the water mains and valves including pavement replacement.
 12. Site Restoration, not specifically included for payment elsewhere;
 13. Traffic management including coordination of police details officers, providing traffic control devices, signs, barriers, cones, barrels, temporary paving for traffic for pedestrian control, and all items as directed by the Engineer.
 14. Erosion and sedimentation control.
 15. Dust control by water or other means besides calcium chloride.

1.2 ITEM DESCRIPTIONS, Water Base Bid

A. Items W-1, Water Mains

1. Items W-1a and W-1b, Water Mains

- a. The unit prices shall be considered as full compensation for furnishing all labor, equipment, materials and services for installing CL 52 ductile iron water pipe of the diameters indicated on the Drawings; connections to existing mains and hydrants where required; couplings not included for payment elsewhere; trench excavation; removal of existing pavement, removal of unsuitable material, furnishing and installing suitable refill material, 8-mil polywrap where required by the Engineer, protection of utilities; backfilling, bedding; placing gravel subbase, compaction, excavation support, cutting and capping existing mains, plugging and closing gate valves on abandoned lines to be abandoned as indicated on the Drawings, and removing gate boxes prior to final paving, dewatering; removal and disposal of existing pipes and structures along the proposed alignment, temporary siltation controls (silt sacks and silt bags), permits compliances and associated fees, landscaping not included for payment elsewhere, pressure testing; providing water for pressure and leakage testing; disinfection; sampling; laboratory analyses; returning physical features to their original condition; clean up; removal and disposal of excess material off-site, and all else incidental thereto, for which separate payment is not provided under other items in the Bid Form.
- b. The lengths of water main pipe to be paid under the appropriate subdivision of this item shall be measured for payment by the linear foot of water main installed, complete and accepted in place. Measurement will be along the water main centerline without deduction for valves and fittings. Hydrant branch lines will be measured from the center of the main line tee to the centerline of the hydrant. Water pipe installed but not successfully tested and/or chlorinated will be paid for at a maximum of 50 percent of the unit prices bid under this item of the proposal. The remaining 50 percent will be paid upon receipt of successful test results by the Engineer. All reductions in payment due to unsuccessful testing will be made prior to normal retainage.

B. Item W-2, Fitting, Couplings and Restraints

1. Item W-2a, Fittings and Solid Sleeve Couplings

- a. The unit bid for this item shall be considered full compensation for furnishing all labor, equipment, materials and services including taps with corporations or bleeder valves on plugs for testing of water mains and as relief blow-offs, and all else incidental thereto for the satisfactory completion of the work.
- b. Fittings, including solid sleeves, will be measured for payment by the pound actually installed in the completed project and accepted by the Engineer. Weight shall be based upon manufacturer catalog data and shipping weight slips furnished from the supplier to the Contractor. No payment will be allowed for weight of cement linings. No payment will be allowed for standard mechanical joint glands and accessories which are not used due to installation of restrained joints. Anchor tees shall be paid under this item for body weight as noted above.

2. Items W-2b and-W-2c, Restraints

- a. The number of mechanical and push on restrained joints to be paid for under Item 2b and Item 2c will be the number of restraints installed and accepted by the Engineer. Restraints installed for contractor convenience shall not be paid for under this item, but are included for payment under the applicable division of Item 1.
- b. Payment for furnishing and installing additional fittings required to perform the work will be paid for under the unit price bid in Item 2a.

C. Item W-3, Gate Valves and Boxes

1. Items W-3a and W-3b, Gate Valves and Boxes

- a. The unit prices bid for these items shall be considered full compensation for furnishing all labor, equipment, materials, and services required or incidental for the satisfactory completion of the work.
- b. Measurement for payment for furnishing and installing valves with boxes will be based on the number of different sizes of each valve actually installed in the completed project and accepted by the Engineer.

D. Item W-4, Fire Hydrants

1. The unit price for this item shall be considered full compensation for furnishing all labor, equipment, and materials required for excavation and backfill, setting of hydrant, thrust blocking, placing drain stone, pressure testing, disinfection, removal of excess excavated material, clean up, painting, pavement cutting, curb and sidewalk replacement, loam and seed, hydrant extensions (as needed), restoration of public and private property, testing and all else incidental thereto for the satisfactory completion of the work.
2. Payment shall also include excavation, removal, and stacking of existing hydrants at the Town's DPW yard, cutting and capping branch main, backfill, bedding, and all related work necessary to complete the work.
3. All anchor tees, 6-inch gate valves and boxes, 6-inch ductile iron pipe, and mechanical joint restraints required for hydrant installation will be included for payment under their respective items in the Bid Form.
4. Measurement for payment for furnishing and installing hydrants will be based on each hydrant actually installed in the completed project and accepted by the Engineer.

E. Item W-5, Water Service Taps

1. Items 5a, 5b, Water Service Taps, including corporations, fittings, curb stops and boxes
 - a. The unit prices bid for the subdivisions of this item shall be considered full compensation for furnishing all labor, equipment, materials, services, excavation and backfill, pavement cutting, removal and disposal, sidewalk and curb replacement, restoration, testing and all else incidental thereto for which separate payment is not provided. Each service tap shall be complete and include corporation stops, saddles (2-inch taps only), fittings, curb stops and boxes. Service tubing will be paid for under Item 6.
 - b. All water services in Fox Hill Road will be replaced, as part of the water main replacement in Fox Hill Road. No water services in Fox Hill will be replaced with a live water service tap.
 - c. Live water service taps should be used in Emerald Road and Willow Road.
 - d. Measurement and payment shall be on the basis of actual number of services connected to the water main in the completed project as accepted by the Engineer.

F. Item W-6, Water Services, Copper Tubing

1. The unit price for this item shall be considered full compensation for all labor, equipment, materials, and services necessary for installing the tubing including maintenance of services, excavation, dewatering, cutting or excavating existing sheeting, sheeting and shoring, sand bedding, backfill, compaction, shutdown of abandoned corporations, removal and disposal of existing service pipe and other surplus material from the job site, connections, adapters, testing, flushing, and all else incidental for the satisfactory completion of the work. The unit price will also include the removal and replacement of bituminous concrete berms, concrete curbs and granite curbs, loam and seed, and the restoration of sidewalk, driveways, retaining walls or other disturbed site features.
2. Measurement for payment for water services shall be by the actual number of linear feet of water services, as specified, measured in place along the centerline of the pipe from the proposed water main to the locations indicated on the standard details.

G. Item W-7, Abandoning existing 4-inch main in Emerald/Willow Road

1. Item W-7a, Abandon existing 4-main in Emerald Road at Spring Road, and remove up to (3) gate valve boxes in Emerald Road.
 - a. The unit prices shall be considered as full compensation for furnishing all labor and equipment for removing 6x4 Tee, installing 6-inch restrained solid sleeve, cutting and capping (restrained cap) the existing 4-inch main in Emerald Road, at the intersection of Spring Road, as indicated on the Drawings and removing up to three gate valve boxes in Emerald Road as indicated on the Drawings.
 - b. The lump sum unit price for this item shall be considered full compensation for furnishing all labor and equipment required for excavation and backfill as necessary, pavement cutting, dewatering, erosion and sedimentation control, compaction, furnishing and placing 12-inches of compacted gravel sub-base under paved areas, landscaping restoration, curb and sidewalk replacement, restoration of public and private property, clean up and all else incidental thereto for the satisfactory completion of the work at each location.
 - c. 6-inch solid sleeve, 4-inch cap, and mechanical joint restraints required to abandon the 4-inch main will be included for payment under their respective items in the Bid Form. Any other materials needed to complete this work shall be included in this pay item.
 - d. Payment for digging and removing up to three gate valve boxes in Emerald Road at Pond Street intersection, and in the Ocean Street intersection as indicated in the Drawings is included in this item.

- e. Payment for ensuring that all properties tied to the 4-inch are connected to the 10-inch main before abandoning the 4-inch main is included in this item.
- f. Gate valve no longer in service at the Emerald and Spring Road intersection is to be removed.

2. Item W-7b, Abandon existing 4-main in Willow Road at Valley Road

Town records indicate the 4-inch main in Willow Road dead ends at the Valley Road intersection. Contractor to confirm the configuration in the field.

If the 4-inch main is connected to the 6-inch main at Valley Road, then this pay item will be used to compensate the Contractor to abandon the 4-inch main in Willow Road at the Valley Road intersection. This item will not be used if the 4-inch main dead ends at the Valley Road intersection.

- a. The unit prices shall be considered as full compensation for furnishing all labor and equipment for removing 6x4 Tee, installing 6-inch restrained solid sleeve, cutting and capping (restrained cap) the existing 4-inch main in Willow Road, at the intersection of Valley Road, as indicated on the Drawings.
- b. The lump sum unit price for this item shall be considered full compensation for furnishing all labor and equipment required for excavation and backfill as necessary, pavement cutting, dewatering, erosion and sedimentation control, compaction, furnishing and placing 12-inches of compacted gravel sub-base under paved areas, landscaping restoration, curb and sidewalk replacement, restoration of public and private property, clean up and all else incidental thereto for the satisfactory completion of the work at each location.
- c. 6-inch solid sleeve, 4-inch cap, and mechanical joint restraints required to abandon the 4-inch main will be included for payment under their respective items in the Bid Form. Any other materials needed to complete this work shall be included in this pay item.
- d. Payment for ensuring that all properties tied to the 4-inch are connected to the 10-inch main in Emerald Road and Willow Road before abandoning the 4-inch main is included in this item.

K. Item W-8, Temporary water piping and service connections

1. The lump sum price shall be considered as full compensation for design and submittal of temporary bypass piping plan, furnishing and installing temporary pipe, cross trenches over roadways and driveways including temporary and permanent paving of all cross trenches at driveways and roadways, temporary water services, temporary hydrants (spaced every 500 feet), proper protection of temporary pipe, disinfecting, flushing, testing, connection to house service line, connection to existing system hydrants, and/or existing mains, connection to fire service lines, maintenance and all labor and materials required by the Contract Documents.

L. Item W- 9, Test Pits

1. Under the unit price bid, the Contractor shall excavate and backfill as necessary and as approved by the Engineer to locate pipe, utilities, and possible obstructions. Included under the unit price is payment for excavation and backfill, dewatering, erosion and sedimentation control, compaction, furnishing and placing 12-inches of compacted gravel sub-base under paved areas, landscaping restoration including restoring pavement, all labor, services and equipment necessary for exploratory excavations.
2. Measurement and payment will be based on the actual cubic yards of material excavated, as approved by the Engineer prior to excavation. The unit prices shall be considered as full compensation for furnishing all labor.

M. Item W-10, Rock Excavation (**\$50.00 PER CUBIC YARD MINIMUM**)

1. Under the unit price bid, the Contractor shall excavate, remove and dispose of rock from trenches and excavated areas. Included in the price bid per cubic yard shall be related costs such as drilling, blasting, and replacement with suitable gravel material; and protection of persons and private property.
2. Measurement and payment will be on the basis of cubic yards of rock excavated. Depth of rock in pipe trenches will be measured from the rock surface to 6-inches below the invert of the pipe and the maximum width shall be 5-feet. Any rock excavated to a depth or width greater than the above shall be backfilled with gravel at the Contractor's expense.

N. Item W-11, Excavation of Unsuitable Material Below Grade

1. Under the unit price bid, the Contractor shall remove peat or other unsuitable material below the grade or pipe as approved by the Engineer, load, transport, and dispose such material away from the job, furnish and place approved gravel material in the place of material removed.
2. Measurement for payment will be on the basis of cubic yards of unsuitable material excavated.
3. The depth of unsuitable material in pipe trenches shall be measured from 6-inches below the invert of the pipe to the depth of replacement. The width of unsuitable material shall be 5-feet.

O. Item W-12, Pavement

1. Item W-12a, Temporary Trench Pavement

- e. The unit price will constitute full compensation for furnishing and placing the 2-inch thick temporary pavement in areas within the water trenches, as specified. Payment shall include furnishing, installing and compacting the gravel subbase for the roadway, as required by the Contract Documents. Payment shall be full compensation for all preparatory work and furnishing, placing and compacting the asphaltic concrete pavement as required by the Contract Documents.
- f. The price shall include the cost of the bituminous material placement and maintenance of the construction to include additional materials and labor required due to settlement and/or maintenance over a winter shut down, tack coat, cutting or keying of the pavement, removal and resetting of all manhole frames, gate boxes, curbs, catch basins, etc.; and the repair of traffic loop detectors and reflectorized pavement markings. Payment shall also include furnishing, installing and compacting the gravel subbase for the roadway, as required by the Contract Documents.
- g. Measurement for payment will be the actual tons of temporary pavement delivered and properly placed and compacted.

2. Item W-12b, Hot Mix Asphalt (HMA) Binder/Intermediate Course (Trench Repair)
 - a. The unit price will constitute full compensation for removing the temporary pavement where required, restoring and regrading the gravel sub-base course, apply the cutback asphalt, constructing the 2-1/2-inch thick binder pavement and applying temporary pavement markings (as needed).
 - b. The price shall include the cost of the bituminous material placement and maintenance of the construction to include additional materials and labor required due to settlement and/or maintenance over a winter shut down, tack coat, cutting or keying of the pavement, removal and resetting of all manhole frames, gate boxes, curbs, catch basins, etc.; and the repair of traffic loop detectors and reflectorized pavement markings. Payment for furnishing, installing and compacting the processed gravel subbase for roadway shall be made under the applicable unit price bid per linear foot of pipe, as required by the Contract Documents.
 - c. Measurement for payment will be the actual tons of HMA binder/intermediate pavement delivered and properly placed and compacted.
3. Item W-12c, Hot Mix Asphalt (HMA) Top/Surface Course (Trench Repair)
 - a. The unit price will constitute full compensation for constructing the 1-1/2-inch top course pavement permanent trench repair resurfacing over the width of the trench as specified. The unit price will include all items shown on the details or specified and shall also include grading adjacent to the edge of the new pavement, adjusting or raising all existing and new castings to the required grade, furnishing and applying all permanent pavement markings, complete replacement (repairs/splices are not acceptable) of existing traffic loops, installing electrical wire and cable for traffic signals to restore preconstruction conditions, and three (3) year guarantee.
 - b. Measurement for payment will be the actual tons of HMA top/surface pavement delivered and properly placed and compacted.

P. Item W-13, Calcium Chloride

1. The unit price bid shall be considered full compensation for all labor materials, equipment and incidental work required for application of calcium chloride.
2. Calcium chloride will be measured by the actual number of 100-pound bags or major fraction thereof, applied. Dust control by use of water is considered to be included in the price of pavement replacement.

Q. Item W-14, Mobilization and Demobilization

1. The lump sum bid shall be full compensation for all costs associated with mobilization and demobilization including but not limited to transportation of equipment and materials to the construction site, mobilization, demobilization, utility connection fees, permits, licenses, bonds, insurance and all other incidental Work relative thereto, all as required by the Contract Documents.
2. Mobilization costs are the costs of initiating the Contact, exclusive of the cost of materials.
3. Payments for mobilization will not exceed 5 percent of the contract price. A minimum of 5 percent of the contract price will be retained until such time that demobilization is complete.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

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SECTION 01025

MEASUREMENT AND PAYMENT, DRAIN BID

PART 1 – GENERAL

1.1 SCOPE

- A. Payment for the items specified in the Bid Schedule (Items D-1 through D-27 and Items D-1A through D-27A), shall include compensation for furnishing all labor, tools, equipment, supplies, and manufactured articles, and for all operations, and incidentals appurtenant to the items of work described, to complete the various items of the WORK, all in accordance with the requirements of the Contract Documents, Drawings, Specifications, Addendum, and other Modifications issued by and approved by the Owner and Engineer, including all costs for permits, compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). The prices named in the Bid Schedule shall include all Work items described or implied in the Contract Documents, Drawings, Specifications, Addendum, and other Modifications issued by and approved by the Owner and Engineer, and all other Work items necessary to manufacture, install, test, and start-up a complete working project.

- B. Work items to be included in the Bid Schedule prices, not included for separate payment elsewhere include, but are not limited to:

Obtaining all permits to complete work including local permits;

Traffic regulation, pedestrian, and vehicle control on Town roadways, private roadways, and private parking lots as required to keep one-lane alternating traffic open at all times and two-lane unobstructed traffic open for emergency vehicles and school/public buses; preparing detour and signage plans for each roadway segment between intersections as separate plan, maintaining detour signage plans; ordering, managing, and coordinating police details, obtaining and posting No Parking restrictions;

Transporting trash and recyclables out of the work area if municipal pickup is hindered;

Snow removal from the streets and sidewalks within the work zone during the contract duration;

Providing, maintaining, and protecting staging area outside of resource area buffer zones, removal of equipment and materials from jobsite to staging area at the end of each workday;

Preconstruction videos and photographs; construction photographs;

Providing sanitary accommodations on jobsite and positioning them out of resource area buffer zones and away from private property where feasible;

Maintain and reset benchmarks as required to complete the work;

Notification and coordination with electric and gas companies for observation and inspections when crossing or working in proximity to overhead wires or buried gas utilities;

Coordination and cooperation with other utilities and contractors working within the work zone during the contract period and scheduling activities to avoid conflict;

Coordination, notification, and compliance with the requirements of National Grid gas distribution when working in close proximity to utility;

Excavation, of soil from pipe bedding zone and replacement with suitable soil for pipe bedding;

Excavation, handling, segregation, re-use as directed of excess soil materials suitable for backfill;

Excavation, handling and disposal of soil materials excavated within trench limits of payment and determined by the Engineer to be unsuitable for trench backfill including a volume of unsuitable soil materials up to 25% of the total volume of excavated soils within trench limits of payment, replacement of unsuitable soil materials with suitable trench backfill; additional excavation; temporary excavation support;

Furnishing and installing crushed stone, gravel borrow, common fill, pipe bedding materials, gravel backfill to replace unsuitable soil in trench limits, common fill, and gravel subbase material;

Backfill and compaction; compaction testing;

Furnishing and installing filter fabric, mulch sock or silt fence around stockpiles;

Furnishing and installing brick and mortar plug in abandoned pipes up to 8-inch in diameter.

Construction dewatering including pumps, piping, dirt bag filters and sedimentation tanks if required;

Saw-cutting, excavation, and disposal of bituminous pavement, bricks, cobbles, cement concrete and cement concrete from test pits and construction trenches;

Tree pruning, protection and maintenance;

Locating, supporting, bracing, and protecting existing utility pipes, services, conduits, duct banks, and utility poles, including temporary pole support and removal and replacement of cable guy pole support;

Removal and disposal of all water pipe, valves, fittings, service pipe and tubing of various materials including iron and lead, and boxes exposed during construction including existing abandoned pipes or pipes to be abandoned after new main is installed;

Removal, handling, and disposal of all asbestos cement pipe and fittings in a legal manner in accordance with MassDEP regulations and guidance document;

Abandonment of existing utilities, installing mortar plugs in all abandoned pipes crimping or plugging all abandoned all abandoned services with mortar, removal and disposal of existing, abandoned or relocated utilities;

Signal tracing and locating all water service boxes and water services, including coordinating with homeowners for access to buildings, signal tracing, locating boxes with magnetic detectors, and exploratory excavations;

Removal and replacement of water mains, active or abandoned sewer pipes and main or other utilities in conflict with construction. Removal and disposal of abandoned gas pipes, communications conduits, wires and structures encountered during construction;

Concrete cradles, pipe connections, and field closures. Concrete encasement, including external pipe wrap if required, of impacted utilities if water and sewer separation requirements are not met;

Dust control – including water and calcium chloride, regular sweeping, and removing snow from streets and sidewalks where work is ongoing, repair of existing and developing potholes within project area;

Cold patch or “temporary” bituminous paving and replace all existing pavement markings with temporary marking paint for traffic control, safety, or other use as directed by the Engineer outside the trench limits of payment;

Providing and maintaining steel road plates with spikes, shims, and cold patching;

Preparation of a water valve operation and water service interruption sequencing plan, preparation and distribution of service interruption notification flyers to affected residents as directed by the Town;

Planning for and dealing with water leakage from all existing water valves during construction and when making all connections between new and existing water mains and services;

Dewatering of construction trench to control leakage from all existing water valves during construction as required to make all connections between new and existing water mains and services;

Remove and reset all signs, bollards, benches, fences, posts, poles, gates, walls, landscaping, landscaping boulders, plantings, and all other surface features on public and private property which may need to be removed for construction;

Coordination with the utility companies for the relocation, protection, support, and other work required to facilitate the completion of the project. Provide access for utility owners and operators to their respective utilities; and communicating with affected homeowners and residents;

Distributing written notifications to all properties within the work zone and all properties affected by water service interruptions prior to beginning work, distributing additional written notifications to inform residents of seasonal work starts and stops and schedule changes, attend Town and neighborhood/business meetings if required;

Preparation and distribution of “Start of Work” notice and service interruption notices(s) to all residents in project area; attendance and participation in project meetings with abutting residents and business owners and managers;

Submitting work plans and shop drawings; fulfilling all reporting requirements;

Preparation and submission of monthly and final “red line “record drawing information;

Clean-up and restoration of all surface features not included for payment elsewhere;

Providing, maintaining, and protecting construction staging area for stockpiled soil, equipment, and materials outside of the project area and wetland resource area buffer zones and outside of land zoned “Residential”. Removal of equipment and materials from jobsite to staging area at the end of each workday unless approved otherwise by the Town;

- C. The Contractor and Subcontractors shall not take advantage of any apparent error or omission on the Drawings or Specifications. They shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract Documents at no additional cost to the Town. The Town reserves the right to reject any and all bids.
- D. The term furnish means supply and deliver to the Project site, including the actual unloading, unpacking, assembly, erection, placing, installation, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations, unless stated otherwise.

1.2 LUMP SUM ITEMS

- A. Measurement and payment for work performed shall be based on the percent complete for the various lump sum prices on the approved schedule of values.
- B. Payment for the lump sums shall be full compensation for all labor, materials and equipment required to furnish, install, construct startup and test the work covered under that lump sum item.
- C. Payment shall also fully compensate the Contractor for any other work which is not specified or shown, but which is necessary to complete the work.
- D. Measurement and payment will be based on the terms of this specification Section 01025. Any references to MassDOT or Mass Highway Department specifications and standards in these contract documents are for materials and methods requirements, descriptions for Compensation (including Methods of Measurement and Basis of Payment or similar) in standard specifications of MassDOT or Mass Highway Department do not apply to this contract.

1.3 MEASUREMENT FOR PAYMENT

- A. Work completed to date, measured as a percentage of the total Work, shall be submitted by the Contractor and substantiated as required by the Town.

- B. The Town will review the submittal for completeness and verification.
 - 1. Include a checklist of completed items; only signed-off items will be considered for payment.
 - 2. Include red-lined drawings indicating degree of completion.
- C. Unit Price Items: Measurement for payment shall be based upon the measured quantity as described in this measurement and payment section.
- D. Measurement and payment will be based on the terms of this specification Section 01025. Any references to MassDOT or Mass. Highway Department specifications and standards in these contract documents are for materials and methods requirements, descriptions for Compensation (including Methods of Measurement and Basis of Payment or similar) in standard specifications of MassDOT or Mass. Highway Department do not apply to this contract.

Item No. D-1 – Surveying

- A. Measurement
Measurement for payment will be based on the percentage completion of each task as determined by the Engineer according to the Contractor's submitted schedule of values as approved by the Engineer.
- B. Payment
Payment for Item No. D-1 – Surveying shall be based on the Lump Sum Price bid for this item in the proposal. Under the Lump Sum price bid for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to complete field survey by professional land surveyor (MA) to establish and confirm elevations and depths of existing utilities from accessible structures or test pits (exploratory excavations) and establish and maintain construction benchmarks. The work includes all items included in this Section's Paragraph 1.1.B, above, as well as establishing at least a half-dozen construction benchmarks along proposed pipe route on project datum, replacing or maintaining benchmarks during construction; establishing the elevation of all pipes in manholes or structures to be modified or connected to as part of this project, and top of pipe and pipe invert depths and elevations, confirming the rim and invert elevations and top and bottom of utilities and duct banks exposed in conjunction with exploratory excavation by the contractor; preparing and submitting information in tabular and graphic format, all incidental work not included for payment elsewhere.

Item No. D-2 – Exploratory Excavation

- A. Measurement
Measurement for payment will be based on the actual cubic yards of material displaced during exploratory excavation as directed and as measured by the Engineer.
- B. Payment
Payment for Item No. D-2 – Exploratory Excavation will be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to excavate and refill such materials as necessary to locate pipe, utilities and other possible obstructions. The work includes all items included in this Section's Paragraph 1.1B, above, as well as signal tracing to locate existing utilities, saw-cutting, stripping, and disposing existing pavement, sidewalk, curb, and subbase materials; temporary support of excavation, excavation, raising buried valve boxes, shooting grades of existing utilities based on local datum, cutting and removal of a section of existing pipe or main within excavation, cleaning debris from both ends of cut pipe, coordinating with Town to provide access for pipe cleaning and inspection, backfill, furnishing and placing gravel subbase under paved areas, compaction; repair of any utility lines and services broken or cut during construction with pipe fittings; vacuum excavation with "Vactor" truck or similar as required to expose utilities as required; and all work incidental thereto and all work not specifically included for payment under other items.

Item No. D-3 – Earth Excavation and Refill Below Normal Depth

- A. Measurement
Measurement for payment will be based on the actual cubic yards of unsuitable material excavated and replaced with suitable gravel below normal depth to as directed by the Engineer and as measured by the Engineer. Earth excavation and refill below normal depth without prior authorization from the Engineer will not be measured for payment.
- B. Payment
Payment for Item No. D-3 – Earth Excavation and Refill Below Normal Depth will be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to excavate and refill such materials as necessary beneath the normal depth to replace unsuitable soil materials as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as temporary support of excavation, excavation, furnishing and installing gravel backfill or gravel base under paved area; repair of any utility lines and services broken during construction; and all work incidental thereto and all work not specifically included for payment under other items.

Item No. D-4a – Rock Excavation (Minimum)

- A. Measurement
Measurement for payment will be based on the actual cubic yards of rock excavated, removed, and disposed of from within the Trench Payment Limits as indicated in the Drawings and as measured by the Owner or Engineer. Rock encountered during excavation that measures less than one (1) cubic yard, or rock encountered outside the trench payment limits, will not be paid under this item and will not justify any additional payment.
- B. Payment
Payment for Item No. D-4a - Rock Excavation (Minimum) shall be based on the stated unit price for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to excavate, remove, and dispose of rock from trenches and excavated areas. The work includes all items included in this Section's Paragraph 1.1B, above, as well as drilling, hammering, segregation of rock and boulders from soil, rock and boulder disposal, furnishing and installing gravel replacement, and all related work, and all incidental work not included for payment elsewhere.

Item No. D-4b – Rock Excavation (Additional)

- A. Measurement
Measurement for payment will be the quantity measured under Item D-4a. Rock encountered during excavation that measures less than one (1) cubic yard, or rock encountered outside the trench payment limits, will not be paid under this item and will not justify any additional payment.

- B. Payment
Payment for Item No. D-4b - Rock Excavation (Additional) shall be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall include additional costs for performing rock excavation and disposal should he decide that the minimum unit price in Item D-4a is insufficient compensation.

Item No. D-5 – Cleaning and CCTV Inspection of (6 to 12)-inch Sewer and Drain Pipe

- A. Measurement
Measurement for payment will be based on the linear feet of pipe (approximately 6 to 12-inch inside diameter) cleaned and CCTV inspected complete, along the centerline of the pipe, between the inside face to inside face of structures or the termination of CCTV inspection.
- B. Payment
Payment for Item No. D-5 – Cleaning and CCTV Inspection of (6 to 12)-inch Sewer and Drain Pipe shall be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to clean and CCTV inspect sewer and drain pipes, as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as coordination with test pit excavation to gain access to pipe segment, temporary removal and replacement of tide gate as needed for access, bypass pumping, flow handling, traffic signage and worksite protection, homeowner notification and coordination, coordination with Town of Nahant water department for use of hydrants identified by the Town for water supply, providing approved backflow device; providing tractor driven camera with adequate pan, tilt, zoom, and lighting equipped with location and depth tracking signal; cleaning pipe as required to permit CCTV inspection, joint testing and sealing activity, cured-in-place pipelining, or as directed by the Engineer including three (3) passes with high pressure water jetting equipment; completing inspection, marking out approximate location and depth of pipe on street with paint based on tracking signal results, producing CCTV logs identifying the location of observations made during CCTV inspections and cross referencing the structure numbers, providing electronic copies of CCTV inspection videos and logs; removal of all cleaned grit and debris with "Vactor" including connecting manholes, decanting liquids back into sewer system as approved, hauling and disposal of solids in Town dumpster at DPW facility according to Town requirements, hauling and legal disposal of the cleaning debris if Town is not satisfied with disposal methods, and all incidental work not specifically included for payment elsewhere.

Item No. D-6a – Remove, Relocate, Reconnect Sewer Service Pipe, All Depths (Minimum)

- A. Measurement
Measurement for payment will be based on the actual number of sewer service pipes removed, relocated, and reconnected, complete to avoid conflict with proposed utility or structure, or as directed, and measured by the Engineer.

- B. Payment
Payment for Item No. D-6a – Remove, Relocate, Reconnect Sewer Service Pipe, All Depths Minimum) will be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to remove, relocate, and reconnect sewer service pipe to avoid conflict with proposed utility or structure, or as directed by Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as saw-cutting and excavation to locate existing service pipe or structure where new pipe connection will be made; field verification of internal and external diameter of pipe or structure, removal and legal disposal of existing pipe and fittings, installation of new 5 or 6-inch PVC sewer service pipe, between the sewer main and the property line, fittings, couplings, and tees or saddle connections to the main as required; installation of pipe, fittings; repair and modification of existing structures around point of connection as required; installation of crushed stone bedding, and all incidental work not specifically included for payment elsewhere.

Item No. D-6b– Remove, Relocate, Reconnect Sewer Service Pipe, All Depths (Additional)

- A. Measurement
Measurement for payment will be the quantity measured under Item D-6a.
- B. Payment
Payment for Item No. D-6b – Remove, Relocate, Reconnect Sewer Service Pipe, All Depths (Additional) will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall include additional costs for removing, relocating, and reconnecting sewer service pipe, should he decide that the minimum unit price in Item No. D-6a is insufficient compensation.

Item No. D-7 – Furnish and Install (10 to 12)-inch HDPE Drain Pipe, All Depths

- A. Measurement
Measurement for payment will be based on the actual linear feet of new (10 to 12)-inch diameter HDPE drain pipe installed, complete as measured by the Engineer along the centerline of the pipe, through the fittings, between the inside face to inside face of structures or between the points of connection with existing pipes, including piping installed in manhole to construct inside-drop connections.
- B. Payment
Payment for Item No. D-7 – Furnish and Install (10 to 12)-inch HDPE or Drain Pipe, All Depths will be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to install new (10 to 12)-inch diameter watertight HDPE pipe complete as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as saw-cutting and excavation to locate existing pipe or structure where new pipe connection will be made; field verification of internal and external diameter of pipe or structure, removal and legal disposal of existing pipe and fittings, installation of new (10 to 12)-inch HDPE drain pipe, fittings, couplings, and caps as required; installation of pipe, fittings; repair and modification of existing structures around point of connection as required; installation of crushed stone bedding, and all incidental work not specifically included for payment elsewhere.

Item No. D-8 – Furnish and Install 8-inch HDPE or Ductile Iron (DI) Drain Pipe, All Depths

- A. Measurement
Measurement for payment will be based on the actual linear feet of new 8-inch diameter double walled HDPE (or Ductile Iron) drain pipe installed, complete as directed and measured by the Engineer along the centerline of the pipe, through the fittings, between the inside face to inside face of structures or between the points of connection with existing pipes.
- B. Payment
Payment for Item No. D-8 Furnish and Install 8-inch HDPE or Ductile Iron (DI) Drain Pipe, All Depths will be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to install new 8-inch diameter double walled HDPE (Or Ductile Iron) drain pipe complete as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as saw-cutting and excavation to locate existing pipe or structure where new pipe connection will be made; field verification of internal and external diameter of pipe or structure, removal and legal disposal of existing pipe and fittings, installation of new 8-inch double walled HDPE (or Ductile Iron) drain pipe, fittings, couplings, and caps as required; installation of pipe, fittings; repair and modification of existing structures around point of connection as required; installation of crushed stone bedding, and all incidental work not specifically included for payment elsewhere.

Item No. D-9 – Core Connect to Existing Pipe or Structures; All Sizes

- A. Measurement
Measurement for payment will be based on the number of complete cored drilled circular openings made to existing or new sewer or drain or structure complete, to allow connection of service or main pipe, as directed by Engineer and as measured and approved by the Engineer. Repair of sewer or drain main pipe or structure and/or repeat cored connections due to pipe or structure damaged during cored connections will not justify additional payment, square cut or knocked out openings in pipes or structures will not be measured as core drill connections.
- B. Payment
Payment for Item No. D-9 – Core Connect to Existing Pipe or Structures will be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to connect or redirect sewer or drain pipes or services to sewer or drain or structure, complete as specified or required by Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as saw cutting and excavation to locate, expose, and support sewer or drain main pipe or manhole/catch basin structure; field verification of internal and external diameter of sewer or drain main pipe or structure; core drilling sewer or drain main pipe or structure with circular bit sized for service to be connected with stainless steel bands, fittings; forming concrete and grout to cast sleeve into manhole; connecting the new PVC, HDPE, or DI, and all incidental work not included for payment elsewhere.

Item No. D-10 – Furnish and Install Brick and Mortar Plug in Pipe Larger Than 8-inch Diameter

- A. Measurement
Measurement for payment will be based on the number of brick and mortar plugs installed in pipes larger than 8-inch diameter as directed by Engineer, and as measured and approved by the Engineer. Mortar plugs installed in pipes with inside diameters of 8-inches or smaller will not be measured for payment.
- B. Payment
Payment for Item No. D-10 – Furnish and Install Brick and Mortar Plug in Pipe Larger Than 8-inch Diameter will be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to furnish and install brick and mortar plugs in pipes larger than 8-inch diameter complete, as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as saw cutting and excavation to locate and expose pipe if required, field verification of internal and external existing pipe diameter; cutting existing pipe to be plugged if required, removal and legal disposal or removed pipe section, installing brick and mortar plugs to completely seal pipe at least 12-inches into pipe, fill voids in structure wall around plugged pipe if required, and all incidental work not specifically included for payment elsewhere.

Item No. D-11 – Remove/Abandon Existing Structures

- A. Measurement
Measurement for payment will be based on the total number of existing sewer or drain manhole or catch basin structures removed completely or abandoned by the Contractor as shown on plans or as directed and as approved by the Engineer. Structures modified as part of Bid Item No. D-16 will not be measured for payment.
- B. Payment
Payment for Item No. D-11 – Remove/Abandon Existing Structures shall be based on the unit price bid for this item in the proposal. Under the Unit Price bid for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to remove/abandon existing sewer or drain manhole or catch basin structures complete, as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1.B, above, as well as saw-cutting, removing and disposing sidewalk and pavement materials; remove existing frames and covers and delivery to Owner if selected by Owner for salvage, disposal of existing frames and covers not selected for salvage by Owner; saw-cutting existing pipe connections; removal and disposal of brick, block, or concrete structure lid, cone, walls, base or corbel as directed; providing and compacting gravel fill in abandoned structure, removal and legal disposal of all debris, backfill and compaction, removal and replacement of existing subbase with 6-inch minimum thickness of new gravel subbase within disturbed areas and all incidental work not included for payment elsewhere.

Item No. D-12 – Install New 5-Foot Diameter “Dog House” Drain Manhole

- A. Measurement
Measurement for payment will be based on the number of vertical feet of new 5-Foot diameter “dog House” or “drop over” drain manholes installed by the Contractor, as approved and measured by the Engineer from the lowest pipe connection invert or catch basin sump to the top of the frame. Measurements for payment will be rounded up to the nearest 0.1 vertical feet.
- B. Payment
Payment for Item No. D-12 – Install New 5-Foot Diameter “Dog House” Drain Manhole shall be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to install new 5-foot diameter “Dog House” or “drop over” drain manholes complete as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section’s Paragraph 1.1B, above, as well as installing crushed stone base with geotextile mat as required; furnishing and installing new reinforced, cast-in-place concrete base, 5-foot concrete barrel section with factory or filed cores, flat top section; installation of new frames and covers/grates, bituminous damp proofing; brick tables and inverts; steel rebar, class A and B concrete as required; connecting to existing or proposed pipes with rubber sleeves or mortar, modification of pipes as required to make connections, connections to existing or proposed pipes, fittings as required; concrete, bricks, and mortar to raise frames to grade; concrete collars; and all incidental work not included for payment elsewhere. Furnishing and delivering new cast iron frames and covers/grates will be measured for payment under Bid Item No. D-17. Field core drill connections as directed will be measured for payment under Bid Item No. D-9.

Item No. D-13 – Install New 4-Foot Diameter Catch Basin or Drain Manhole

- A. Measurement
Measurement for payment will be based on the number of vertical feet of new 4-foot diameter catch basins or drain manholes installed by the Contractor, as approved and measured by the Engineer from the lowest pipe connection invert or catch basin sump to the top of the frame. Measurements for payment will be rounded up to the nearest 0.1 vertical feet. Reconstructing or modifying structures as part of Bid Items No. D-16 will not be measured for payment.
- B. Payment
Payment for Item No. D-13 – Install New 4-Foot Catch Basin or Drain Manhole shall be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to install new 4-foot diameter catch basins or manholes complete as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section’s Paragraph 1.1B, above, as well as installing crushed stone base with geotextile mat as required; furnishing and installing new catch basins or manholes of various depths, as directed by the Engineer. Structures to be precast or cast-in-place concrete bases, precast concrete or brick/block riser sections and cones, precast concrete cones or flat-top covers, cut or cast openings for pipe connections, installation of new frames and covers/grates; bituminous damp proofing; steps, brick tables and inverts, fabrication and installation of internal or external drop pipes, fasteners, steel rebar, class A and B concrete as required; connecting to existing or proposed pipes with rubber sleeves,

modification of pipes as required to make connections, connections to existing or proposed pipes, fittings as required; concrete, bricks, and mortar to raise frames to grade; concrete collars; and all incidental work not included for payment elsewhere. Furnishing and delivering new cast iron frames and covers/grates will be measured for payment under Bid Item No. D-17 Field core drill connections as directed will be measured for payment under Bid Item No. 9.

Item No. D-14 – Install New Small Diameter or Masonry Catch Basin or Drain Manhole

A. Measurement

Measurement for payment will be based on the number of vertical feet of new small diameter or concrete masonry catch basins or manholes installed by the Contractor, as approved and measured by the Engineer from the lowest pipe connection invert or catch basin sump to the top of the frame. Measurements for payment will be rounded up to the nearest 0.1 vertical feet. Reconstructing or modifying structures as part of Bid Items No 16 will not be measured for payment.

B. Payment

Payment for Item No. D-14 – Install New Small Diameter or Masonry Catch Basin or Drain Manhole shall be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to install new small diameter or masonry “block” catch basins or manholes complete as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section’s Paragraph 1.1B, above, as well as installing crushed stone base with geotextile mat as required; furnishing and installing new catch basins or manholes of various depths, shapes, and diameters from 2 to 3 feet as directed by the Engineer; including 2’ 6” inside diameter precast concrete manholes, smaller or larger diameter precast manholes, drop over manholes, manholes over existing pipe, typical block and mortar structures with waterproofing sealant, catch basins, and catch basin gutter inlets (CBGI) complete. Structures to be precast or cast-in-place concrete bases, precast concrete or brick/block riser sections and cones, precast concrete cones or flat-top covers, cut or cast openings for pipe connections, installation of new frames and covers/grates; bituminous damp proofing; steps, brick tables and inverts, fasteners, steel rebar, class A and B concrete as required; connecting to existing or proposed pipes with rubber sleeves or mortar, modification of pipes as required to make connections, connections to existing or proposed pipes, fittings as required; concrete, bricks, and mortar to raise frames to grade; concrete collars; and all incidental work not included for payment elsewhere. Furnishing and delivering new cast iron frames and covers/grates will be measured for payment under Bid Item No. D-9. Field core drill connections as directed will be measured for payment under Bid Item No. D-17.

Item No. D-15 – Manhole Rehabilitation, Replace or Reset Frame and Cover

A. Measurement

Measurement for payment will be based on the number of new castings (complete sets of frames and covers or grates) removed and reset or replaced on existing sewer or drain structures as directed by the Engineer, and as measured and approved by the Engineer. A frame and cover/grate set shall be measured as a single casting. Castings provided and installed to replace castings damaged by construction or as part of new or replacement manhole bid items will not be measured for payment. New frames and covers or grates installed as part of Bid Item Nos. D-12, D-13, and D-14. will not be measured for payment. Furnishing and delivering new cast iron frames and covers/grates will be measured for payment under Bid Item No. D-17. Exploratory excavation to locate covers will be measured under Bid Item No. D-2.

B. Payment

Payment for Item No. D-15 – Manhole Rehabilitation, Reset or Replace Frame and Cover shall be based on the unit price bid for this item in the proposal. Under the Unit Price bid for this item, the Contractor shall remove existing frames and covers complete, as indicated or specified or as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as cleaning debris from manholes; saw-cutting, removal and stockpiling the existing castings, and/or steel plates covering structures (including those currently buried), delivery of existing castings to Owner if requested, removal and reconstruction of up to 6 vertical inches of existing masonry or concrete structure as directed by Engineer, installing new castings (manholes labeled "sewer" or "drain", or catch basin grates) as directed, and constructing concrete collars around frames to base or binder grade; installation and removal of temporary pavement, installation of permanent pavement if outside of pipe trench payment width, and all incidental work not included for payment elsewhere. Reconstructing structure in addition to 6 vertical inches will be measured for payment under Bid Item No. D-16.

Item No. D-16 – Reconstruct Sewer or Drain Structures

A. Measurement

Measurement for payment will be based on the vertical feet of sewer, drain, or water structures, including single and double catch basins, reconstructed as measured and approved by the Engineer. Measurements for payment will be rounded up to the nearest 6-inches (0.5 vertical feet) of structures reconstructed as directed. Removal, reconstruction, or modification of sewer or drain structures as required to plug existing pipes, remove/abandon existing structures will be measured for payment under Bid Item No. D-11, resetting or replacing frames and covers (including 6 vertical inches of masonry) will be measured for payment under Bid Item No. D-15.

B. Payment

Payment for Item No. D-16 – Reconstruct Sewer or Drain Structure shall be based on the unit price bid for this item in the proposal. Under the Unit Price bid for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to reconstruct sewer or drain structures, as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as cleaning debris from structures; trimming protruding pipe connections, saw-cutting and disposal of removed portions of sewer, drain, or water structure; removal and stockpiling the existing castings (including those currently buried);

removal and reconstruction or construction of portion of existing masonry or concrete structures of various shapes and diameters as directed by Engineer, including reconstructing structures with mortared masonry block and brick courses, precast concrete rings, cones, flat tops; applying full coat of grout waterproofing sealant to the interior of all reconstructed masonry structures; removal and resetting existing castings with bricks and mortar as required and constructing concrete collars around frames to base or binder grade as directed; and all incidental work not included for payment elsewhere. Providing and delivering new or replacement (sewer or drain) manhole or catch basin castings to be set/reset will be measured for payment under Bid No. D-17.

Item No. D-17 – Furnish and Deliver New Manhole or Catch Basin Castings

A. Measurement

Measurement for payment will be based on the number of manhole or catch basin castings (complete sets of frames and covers or grates) provided and delivered to the job site or Owner, as directed and as measured and approved by the Engineer. A frame and cover/grate set shall be measured as a single casting. A frame and double grate set for double catch basin will be measured as two castings. Castings provided and installed to replace castings damaged by construction will not be measured for payment.

B. Payment

Payment for Item No. D-17 – Furnish and Deliver New Manhole or Catch Basin Casting shall be based on the unit price bid for this item in the proposal. Under the Unit Price bid for this item, the Contractor shall provide and deliver H20 rated cast iron “Sewer” or “Drain” or “Water” manhole frames and covers or catch basin frames and grates with bituminous coating complete, including covers with vent holes, as indicated on the Drawings and as specified or as directed by the Engineer. The work includes all items included in this Section’s Paragraph 1.1.B, above, as well as delivery and storage of frames and covers/grates and double catch basin grates as indicated, and re-delivery to the Owner or site of proposed installation, and all incidental work not included for payment elsewhere.

Item No. D-18a – Remove, Relocate, and Reconnect 12-inch DI Water Pipe (Minimum)

A. Measurement

Measurement for payment will be based on the actual number of locations where 12-inch diameter ductile iron pipe is removed, relocated, and reconnected complete, as required to avoid conflict with proposed utility or structure, or as directed and measured by Engineer.

B. Payment

Payment for Item No. D-18a – Remove, Relocate, and Reconnect 12-inch DI Water Pipe (Minimum) will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall Furnish all labor, materials, tools, equipment, and incidentals required. The work includes all items included in this Section’s Paragraph 1.1B, above, as well as coordination with existing utilities, notification of affected customers prior to isolation, coordinating with water department and assisting with isolation of the work area to allow connections to existing pipe; saw-cutting, excavation, removal and disposal of existing pavement or sidewalk materials; furnishing and installing pipe, fittings, restrained joints, bends, restraint, tie rods and clamps, insulation, couplings, reducers, fittings, joints, concrete thrust blocks and thrust collars on bends and reducer fittings, and pipe bedding; cutting and disposing all existing pipe, fittings, valves, and valve

boxes exposed during construction; connecting to existing pipe; wrapping all fittings with protective corrosion protection wax tape; providing and installing marking tape; backfill and compaction; disinfection, flushing, bacteriological and pressure testing; removal and replacement of existing subbase with 8-inch minimum thickness of new gravel subbase within disturbed areas, and all incidental work not specifically included for payment elsewhere. Typical work to involve relocating water main under other utility and include at least two couplings with restraint rods, four (22 or 45 degree) bends, and at least ten feet of pipe.

Item No. D-18b – Remove, Relocate, and Reconnect 12-inch DI Water Pipe (Additional)

- A. Measurement
Measurement for payment will be the quantity measured under Item No. D-18a.
- B. Payment
Payment for Item No. D-18b – Remove, Relocate, and Reconnect 12-inch DI Water Pipe (Additional) will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall include additional costs for removing and relocating 12-inch DI water pipe should he decide that the minimum unit price in Item No. D-18a is insufficient compensation.

Item No. D-19a – Remove, Relocate, and Reconnect (6 to 8)-inch DI Water Pipe (Minimum)

- A. Measurement
Measurement for payment will be based on the actual number of locations where (6 to 8)-inch diameter ductile iron pipe is removed, relocated, and reconnected complete, as required to avoid conflict with proposed utility or structure, or as directed and measured by Engineer.
- B. Payment
Payment for Item No. D-19a – Remove, Relocate, and Reconnect (6 to 8)-inch DI Water Pipe (Minimum) Pipe will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall Furnish all labor, materials, tools, equipment, and incidentals required. The work includes all items included in this Section's Paragraph 1.1B, above, as well as coordination with existing utilities, notification of affected customers prior to isolation, coordinating with water department and assisting with isolation of the work area to allow connections to existing pipe; saw-cutting, excavation, removal and disposal of existing pavement or sidewalk materials; furnishing and installing pipe, fittings, restrained joints, bends, restraint, tie rods and clamps, insulation, couplings, reducers, fittings, joints, concrete thrust blocks and thrust collars on bends and reducer fittings, and pipe bedding; cutting and disposing all existing pipe, fittings, valves, and valve boxes exposed during construction; connecting to existing pipe; wrapping all fittings with protective corrosion protection wax tape; providing and installing marking tape; backfill and compaction; disinfection, flushing, bacteriological and pressure testing; removal and replacement of existing subbase with 8-inch minimum thickness of new gravel subbase within disturbed areas, and all incidental work not specifically included for payment elsewhere. Typical work to involve relocating water main under other utility and include at least two couplings with restraint rods, four (22 or 45 degree) bends, and at least ten feet of pipe.

Item No. D-19b – Remove, Relocate, and Reconnect (6 to 8)-inch DI Water Pipe (Additional)

- A. Measurement
Measurement for payment will be the quantity measured under Item No. D-19a.
- B. Payment
Payment for Item No. D-19b – Remove, Relocate, and Reconnect (6 to 8)-inch DI Water Pipe (Additional) will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall include additional costs for performing removal and relocating (6 to 8)-inch DI water pipe should he decide that the minimum unit price in Item No. D-19a is insufficient compensation.

Item No. D-20a – Remove, Relocate, and Reconnect Water Service Pipe including 1-inch Tap, Curb Stop, and Box (Minimum)

- A. Measurement
Measurement for payment will be based on the actual number of existing water service pipes removed, replaced, and reconnected, complete, to avoid conflict with proposed utility or structure, or as directed and measured by the Engineer.
- B. Payment
Payment for Item No. D-20a – Remove, Relocate, and Reconnect Water Service Pipe including 1-inch Tap, Curb Stop, and Box (Minimum) will be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to remove, relocate, and reconnect water services, complete, to avoid conflicts with proposed structures or utilities or as directed. Work to include a new 1-inch “tap”, 1-inch type K copper tubing from the main to the property line, provide and install a new curb stop, valve, and box complete as directed by the Engineer. The work includes all items included in this Section’s Paragraph 1.1B, above, as well as coordination with existing utilities, notification of affected customers prior to isolation, coordinating with water department and assisting with isolation of the work area to allow connections to existing pipe; locating all existing service connections and curb boxes within the project area; shutting existing corporations immediately before connecting home to new water service and/or replacing existing water service; saw-cutting, excavation, removal and disposal of existing pavement or sidewalk materials; removal and disposal of existing water service pipe, fittings, curb stops, and curb boxes; furnishing and installing corporation, saddle, tap, curb stop and adjustable curb box, concrete blocking, fittings, reducers, and couplings as required; flushing new water service and existing water service, connecting to existing water service at property line or as directed; backfill and compaction, removal and replacement of existing subbase with 8-inch minimum thickness of new gravel subbase within disturbed areas, loaming and seeding, surface restoration including landscaping; and all incidental work not specifically included for payment elsewhere.

Item No. D-20b – Remove, Relocate, and Reconnect Water Service Pipe including 1-inch Tap, Curb Stop, and Box (Additional)

- A. Measurement
Measurement for payment will be the quantity measured under Item No. D-20a.
- B. Payment
Payment for Item No. D-20b – Remove, Relocate, and Reconnect Water Service Pipe including 1-inch Tap, Curb Stop, and Box (Additional) will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall include additional costs for removing, relocating, and reconnecting water service pipe including 1-inch tap, curb stop and box, should he decide that the minimum unit price in Item No. D-20a is insufficient compensation.

Item No. D-21 – 2-inch Temporary Bituminous Concrete Pavement in Trenches

- A. Measurement
Measurement for payment will be based on the actual tons of 2-inch minimum compacted thickness bituminous concrete binder course placed within the trench payment limits within the project area and as directed and measured by the Engineer based on tabulation of approved weight slips and yield calculations. Temporary pavement placed outside the trench payment limits and/or placed without the direction of the Engineer will not be measured for payment.
- B. Payment
Payment for Item No. D-21 – 2-inch Temporary Bituminous Concrete Pavement in Trenches will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to furnish and install 2-inch minimum compacted thickness of permanent bituminous concrete binder course within the trench payment limits within the project area as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1.B, above, as well as saw-cutting pavement at the project limits; removal and disposal of pavement; restoring and re-grading the existing gravel base course, compaction; adjusting all castings and valve and service boxes to existing grade; power sweeping; installation of 2-inch minimum compacted thickness of bituminous concrete binder course on a daily basis; replace all existing pavement markings with temporary marking paint, and all incidental work not specifically included for payment under other items.

Item No. D-22 – 4-inch Permanent Bituminous Concrete Pavement in Trenches

- A. Measurement
Measurement for payment will be based on the actual tons of 4-inch permanent minimum compacted thickness bituminous concrete binder and top course placed within the trench payment limits and as directed and measured by the Engineer based on tabulation of approved weight slips and yield calculations. Permanent pavement placed outside the trench payment limits and/or placed without the direction of the Engineer will not be measured for payment.

- B. Payment
Payment for Item No. D-22 – 4-inch Permanent Bituminous Concrete Pavement in Trenches will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to furnish and install 4-inch minimum compacted thickness of permanent bituminous binder and surface courses within the trench payment limits within the project area as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1.B, above, as well as saw-cutting pavement at the project limits or at 1-foot offset to limits of temporary trench pavement; removal and disposal of cut-back pavement and temporary trench pavement or as directed; restoring and compacting the gravel base course, compaction; adjusting all castings and valve and service boxes to existing grade with exterior concrete collars to bottom depth of proposed pavement thickness; power sweeping, applying tack coat to saw-cut pavement edges; installation of 4-inch minimum compacted thickness of bituminous concrete binder and surface courses with paving machine and roller in two courses per details, application of emulsion to each pavement course and to surface joints after paving is completed; replace all existing pavement markings with temporary marking paint, and all incidental work not specifically included for payment under other items.

Item No. D-23 – 3½-inch Permanent Hand Placed Bituminous Concrete Pavement

- A. Measurement
Measurement for payment will be based on the actual tons of 3½-inch minimum compacted thickness permanent bituminous concrete binder and/or surface course hand placed behind the curb line on driveways, aprons, walks, and elsewhere outside the trench limits of pavement as directed and approved and measured by the Engineer based on tabulation of approved weight slips and yield calculations. Temporary pavement and/or pavement placed with paving machine or that can be placed with a paving machine in the opinion of the Engineer, and pavement placed outside the trench limits of pavement to address construction disturbance will not be measured for payment. Hand placed pavement as required to construct curbs and berms will be measured for payment under Item D-23.
- B. Payment
Payment for Item No. D-23 – 3½-inch Permanent Hand Placed Bituminous Concrete Pavement will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to furnish and install 3½-inch minimum compacted thickness of permanent bituminous concrete binder and/or surface course as directed, behind the curb line on driveways, aprons, walks, to construct curbs and berms, and elsewhere outside the trench limits of payment as directed and measured by the Engineer. The work includes all items included in this Section's Paragraph 1.1.B, above, as well as saw cutting pavement at the project limits or at 1-foot offset to limits of temporary trench pavement or as directed to create smooth edges and remove all pavement damaged by construction; removal and disposal of cut-back pavement, and temporary trench pavement, and soil to required depth; restoring and compacting the gravel base course, compaction testing; raising and resetting existing castings and boxes to grade; adjusting all valve and service boxes to proposed grades with exterior concrete collars; power sweeping, applying tack coat to saw cut pavement edges; installation of 3½-inch minimum compacted thickness of bituminous concrete binder and/or surface course in two courses, construction of berms and curbs; application of emulsion to each binder course and to surface joints after paving is completed; replace all existing pavement markings with painted line striping of matching

width and color, and all incidental work not specifically included for payment under other items.

Item No. D-24 – Remove and Reset Granite Curb

A. Measurement

Measurement for payment will be based on the actual linear feet of granite curb removed and reset as directed and measured by the Engineer. The Contractor will brace, protect, and leave in place granite curb wherever possible and during service trenching and installation. The Contractor will not be compensated for removal and resetting of granite curbing for service or hydrant trenching and installation if removal is not necessary in the opinion of the Engineer. The Contractor will not be compensated for removal and resetting granite curb broken by the Contractor during construction.

B. Payment

Payment for Item D-24 – Remove and Reset Granite Curb will be based on the unit price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to remove, protect, store and reset straight or curved sections of granite curb at the same grade or proposed grade including tapered sections, complete as indicated or directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as removing, protecting, storing, and resetting granite curb, saw cutting, removing and disposing of existing sub-grade and subbase providing and compacting suitable base material, placement and alignment of curb, concrete encasement and backfill around curbs as shown on details, and all incidental work not included for payment elsewhere.

Item D-25 – Furnish and Install Loam and Seed

A. Measurement

Measurement for payment will be based on the actual square yards of surface area loamed and seeded within the project limits as shown on the plans or as directed and as measured by the Engineer. Loaming and seeding outside the project area and in staging or stockpile areas to repair construction damage without prior authorization from the Engineer will not be measured for payment.

B. Payment

Payment for Item D-25 – Furnish and Install Loam and Seed will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to furnish and install loam and seed as shown on plans and as directed by the Engineer. The work includes all items included in this Section's Paragraph 1.1B, above, as well as furnishing, hauling, and delivery of suitable top soil "loam", installing loam in all areas designated on the plans and as directed by the Engineer to a minimum depth of 4-inches; grading, compacting, and raking loam; furnishing and installing hydro-seed grass seed mixture, surrounding planted grass areas with stakes and caution tape as directed, watering and maintaining grass until growth requires second cutting as determined by the Engineer, cutting grass once to height of 2-inches, removal and disposal of stakes and caution tape; and all work incidental thereto and all work not specifically included for payment under other items.

Item No. D-26 – Furnish, Install, Maintain, and Remove Erosion and Sedimentation Barrier

- A. Measurement
Measurement for payment will be based on the actual linear feet of erosion and sedimentation barrier (staked mulch sock or as directed) installed, maintained, and removed complete as measured by the Engineer. Erosion and sedimentation barrier installed to replace or maintain damaged or missing barriers will not be measured for payment.
- B. Payment
Payment for Item No. D-26 – Furnish, Install, Maintain, and Remove Erosion and Sedimentation Barrier will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to install erosion and sedimentation barriers, complete. The work includes all items included in this Section's Paragraph 1.1B, above, as well as coordination with the Conservation Commission and property owners regarding layout locations, notification of affected property owners prior to installation; furnishing and installing staked 8-inch diameter mulch sock per details as directed; maintain erosion and sedimentation barriers throughout construction, removal and disposal of erosion and sedimentation barriers following construction and authorization from the Conservation Commission if applicable, restoring areas, and all incidental work not specifically included for payment elsewhere.

Item No. D-27 – Furnish, Install, Maintain, and Remove Silt Sacks in Catch Basins

- A. Measurement
Measurement for payment will be based on each silt sack installed in catch basins as directed, then maintained throughout construction period and removed complete, as measured by the Engineer. Silt sacks installed to replace or maintain damaged or missing silt sacks will not be measured for payment. Filter fabric installed inside or over catch basins will not be measured for payment.
- B. Payment
Payment for Item No. D-27 – Furnish, Install, Maintain, and Remove Silt Sacks in Catch Basins will be based on the Unit Price bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to install silt sacks, complete. The work includes all items included in this Section's Paragraph 1.1B, above, as well as furnishing and installing silt sacks in catch basin structures as directed; maintain silt sacks throughout construction, removal and disposal of silt sacks following construction, and all incidental work not specifically included for payment elsewhere.

END OF SECTION 01025

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SECTION 01050

FIELD ENGINEERING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawing 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.

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. The maintenance of these As-Built Drawings and field records does not in any way relieve the Contractor of his responsibility to notify and make available for review to the Engineer, all elements of the work in progress and work completed, to determine compliance with the Contract Documents. Any portion of the work backfilled or otherwise made inaccessible, prior to its review by the Engineer, shall be unexcavated and exposed at no additional cost to the Owner.

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. Survey Requirements

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

C. Easements and Right-of-Way:

1. Easements and rights-of-way for utilities, if required, will be provided by the Owner.
2. Confine construction operations within limits indicated on drawings and/or within limits of easements or public ways.
3. Place construction tools, equipment, excavated materials, and pipeline materials and supplies, so as to cause least possible damage to property and interference with traffic.

1.5 QUALITY ASSURANCE

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

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 location of sewers, water mains, gas mains, above or below ground electrical wires, cable, other utilities, conduits and structures which may interfere with work.
 - 3. Contractor shall perform test pit excavations in locations where he feels information is required to perform the work.

3.2 APPLICATION

- A. Connection to Existing Facilities:
 - 1. Make connections to existing facilities as indicated on the drawings or as specified.
 - a. When connecting to existing manholes, the new pipeline shall be sealed with a mechanical plug until the new facilities are cleaned and accepted.
 - 2. Other 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.
4. Operation of valves or other appurtenances on existing utilities, when required, shall be performed by respective utility personnel.
 - a. A tight shutdown of Owner's existing 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. The town's water distribution system valves shall be operated by the town's water department personnel only. The Contractor shall give the local water department three (3) working 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, within or outside easements.

3.3 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 01700.

END OF SECTION

SECTION 01060

APPLICABLE CODES

PART 1 – GENERAL

1.1 GENERAL

- A. All work shall be done in strict accordance with all applicable rules and regulations and codes having effect in the Town and State in which the work is being performed; shall conform to all other applicable legal regulations and to insurers' standard requirements; and shall meet all requirements of inspecting authorities. In any conflict between drawings and/or specifications and such rules, standards and requirements, the latter shall take precedence.
 - 1. NOTE, however, that where the requirements of the specifications and/or drawings exceed the requirements of the rules, regulations, and standards referred to herein, the work shall conform to the specifications and/or drawings.
- B. All work shall be subject to review by the Engineer and by all inspectors and authorities having jurisdiction. The Contractor shall replace all imperfect or condemned work with work conforming to all applicable requirements and codes, without extra cost to the Owner. If any work is covered before inspection and approval, the Contractor shall pay all costs for uncovering it, correcting it if necessary, and covering it again.

1.2 LIST OF CODES

- A. The following is a list of applicable codes to which all building, construction, installation, fabrication, and all other related work must comply with and adhere to unless otherwise herein stated and/or additional codes and regulations require:

American Concrete Institute Code and Manual
American Institute of Steel Construction Code of Standard Practice
American Society of Mechanical Engineers
American Society of Testing Materials Specification
American Welding Society
Standards of the United States of America Standards Institute
Massachusetts Building Codes
AWWA
OSHA
Massachusetts Department of Transportation

END OF SECTION

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SECTION 01080

ABBREVIATIONS AND DEFINITIONS

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.
- B. Listing of Abbreviations: The listing of abbreviations in this Specification Section represent the Standard Organization named.

1.2 QUALITY ASSURANCE

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

1.3 LISTING OF STANDARD ORGANIZATIONS AND THEIR ABBREVIATIONS

- A. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean the associated names. Names are subject to change and are believed, but not assured, to be accurate and up to date as of the date of Contract Documents.

AA	Aluminum Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ADC	Air Diffusion Council
AGA	American Gas Association
AGC	Associated General Contractors of America
AI	Asphalt Institute
AIA	American Institute of Architects
AISI	American Iron and Steel Institute
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
ASCE	American Society of Civil Engineers

ABBREVIATIONS AND DEFINITIONS

ASME	American Society of Mechanical Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
BIA	Brick Institute of America
CLFMI	Chain Link Fence Manufacturers Institute
CPI	Concrete Pipe Institute
DEP	Department of Environmental Protection
DIPRA	Ductile Iron Pipe Research Association
EJCDC	Engineers Joint Contract Documents Committee
EJMA	Expansion Joint Manufacturers Association
EPA	Environmental Protection Agency
IEEE	Institute of Electrical and Electronics Engineers
HI	Hydraulic Institute
IEEE	Institute of Electrical and Electronics Engineers
ISA	Instrument Society of America
ISO	International Standards Organization
MIA	Masonry Institute of America
MIL.	Military Specification
MSBC	Massachusetts State Building Code
MSS	Manufacturers Standardization Society of the Valve and Fitting Industry
NAAMM	National Association of Architectural Metal Manufacturers
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NRC	National Roofing Contractors Association
NSPC	National Standard Plumbing Code
NSF	National Sanitation Foundation
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PPI	Plastic Pipe Institute
PS	Product Standards of the National Bureau of Standards
SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPI	Society of the Plastics Industry
SSPC	Steel Structures Painting Council
TCA	Tile Council of America
TPI	Truss Plate Institute
UL	Underwriters Laboratories

ABBREVIATIONS AND DEFINITIONS

1.4 ABBREVIATIONS

- A. Where any of the following abbreviations are used in the Contract Documents, they shall have the meaning set forth opposite each.

AWG	American or Brown and Sharpe Wire Gage
DI	Ductile Iron
NPT	National Pipe Thread
OS&Y	Outside Screw and Yoke
PSA	Pressure Sensitive Adhesive
PVC	Polyvinyl Chloride
USS Gage	United States Standard Gage
WOG	Water, Oil, Gas
WSP	Working Steam Pressure

1.5 DEFINITIONS

- A. Wherever the words defined in this section or pronouns used in their stead occur in the Contract Documents, they shall have the meanings herein given.
- B. General: Basic Contract definitions are included in the Conditions of the Contract.
- C. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.
- D. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Engineer, requested by the Engineer, and similar phrases.
- E. Approve: The term approved, when used in conjunction, with the Engineer's action on the Contractor's submittals, applications, and requests, is limited to the Engineer's duties and responsibilities as stated in the Conditions of the Contract.

- F. Regulation: The term regulation includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- G. Furnish: The term furnish means supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- H. Install: The term install describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.
- I. Provide: The term provide means to furnish and install, complete and ready for intended use.
1. The term experienced, when used with the term Installer means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
 2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
- J. Project Site: is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or test, either at a Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests
- L. Rock: The word “rock,” wherever used as the name of an excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding one (1) cubic yard in volume, or solid ledge rock which, in the opinion of the Engineer, requires, for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed with a hand pick or power operated excavator or shovel, no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits of measurements allowed, which may fall into the excavation, will be measured or allowed as “rock.”

- M. Earth: The word “earth,” wherever used as the name of an excavated material or material to be excavated, shall mean all kinds of material other than rock as above defined.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01100

SPECIAL PROJECT 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. The Contractor shall conform to all miscellaneous requirements as herein specified.

1.3 DESCRIPTION

- A. The work of this section consists of special project procedures during construction including:
 - 1. Construction Sequence
 - 2. Contractor's Emergency Service
 - 3. Schedules
 - 4. Pipe Locations
 - 5. Protection of Underground Facilities and Damages Thereto
 - 6. Disposal of Excavated Pipe and Construction Debris
 - 7. Groundwater Conditions
 - 8. Pavement Schedule
 - 9. Police Details
 - 10. Road and Trench Opening Permits
 - 11. Existing Drain Line Repairs
 - 12. Existing Sewer Line Repairs
 - 13. Separation of Water Lines from Sewers
 - 14. Temporary By-pass Piping
 - 15. Water Main Removal and Installation
 - 16. Alternates
 - 17. Safety Clothing

1.4 INTERFERENCE WITH EXISTING WORKS

- A. The Contractor shall at all times conduct his operations so as to interfere as little as possible with existing works. The Contractor shall develop a program, in cooperation with the Engineer and interested officials, which shall provide for the construction and putting into service of the new works in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted. All work of connecting with, cutting into, and reconstructing existing pipes or structures shall be planned to not interfere with the operation of the existing facilities. It may be necessary to work outside of normal working hours to meet these requirements. Before starting work which will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand.

The Contractor shall make such minor modification in the work relating to existing structures as may be necessary, without additional compensation.

- B. The Contractor shall have no claim for additional compensation by reason of delay or inconvenience in adapting his operations to meet the above requirements.

1.5 MAINTAINING FLOWS

- A. The Contractor shall at his own cost, provide for flow of sewers, drains and water courses interrupted during the progress of the work, and shall immediately card away and remove all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Engineer in advance of interruption of any flow.

1.6 BURIED UTILITY WARNING AND IDENTIFICATION TAPE

- A. Provide detectable aluminum foil plastic backed tape or detectable magnetic plastic tape (color = blue) manufactured specifically for warning and identification of buried piping. Tape shall be locatable by an electronic detection instrument. Provide tape in rolls, 3-inches minimum width, color coded for utility involved with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning and identification shall be CAUTION BURIED WATER PIPING BELOW or similar. Use permanent code and letter coloring unaffected by moisture and other substances contained in trench backfill material. Bury tape with printed side up at a depth of 12-inches below the top surface of earth or the top surface of the subgrade under pavements.

1.7 PROTECTION AGAINST ELECTROLYSIS

- A. Where dissimilar metals are used in conjunction with each other, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact and any resultant electrolysis. The insulation shall be bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other acceptable materials.

1.8 CARE OF WATERCOURSES

- A. The Contractor shall maintain the flow in all watercourses, whether open channel or in pipes, in all sewer and other pipes interfered with in the line of work and convey the flow to a suitable point of discharge so as not to flow upon the work or create a nuisance. In the discharge of water removed from the excavations by pumping or by gravity similar precautions shall be observed. Fire hydrants on or adjacent to the work shall be kept operational and accessible to fire-fighting equipment at all times.

1.9 ACCESS TO HYDRANTS

- A. Fire hydrants on or adjacent to the work shall be kept operational and accessible to fire-fighting equipment at all times.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CONSTRUCTION SEQUENCE

- A. It shall be the Contractor's responsibility to coordinate with the Owner regarding the required sequence of construction.

3.2 CONTRACTOR'S EMERGENCY SERVICE

- A. Any contractor whose place of business is located beyond the vicinity of the site of work and who does not maintain local headquarters 24 hours a day must make satisfactory arrangements with the Owner to service emergencies or complaints which may occur at night, over the weekend, or when the job is shut down.
 - 1. If he does not, the Owner may make arrangements, and the cost will be charged to the Contractor.
 - 2. Before the final estimate is certified for payment, the Contractor shall make similar arrangements to cover the guarantee period.

3.3 SCHEDULES

- A. No work shall be done on Saturdays, Sundays, or Holidays.

3.4 PIPE LOCATIONS

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

3.5 PROTECTION OF UNDERGROUND FACILITIES AND DAMAGES THERETO

- A. The Contractor shall notify DigSafe at least 72 hours prior to the start of work for the purpose of identifying the location of underground utilities. A DigSafe number shall be obtained prior to the commencement of work.
- B. The Contractor shall notify all utility companies of his operations sufficiently in advance of construction and take all measures necessary to avoid damage or undue interruption to the utilities' normal services.
- C. Where indicated on the Drawings, directed, or permitted at the Contractor's request, the Contractor shall dig test pits to locate the various underground facilities.
 - 1. Size of test pit and method of payment shall be as specified in Section 02015 of these Specifications.
- D. The Contractor shall pay, at no additional expense to the Owner, all costs associated with:
 - 1. Protecting and supporting underground facilities.
 - 2. Repairing, replacing, or relocating underground facilities which are damaged by the Contractor's operations.
 - 3. Temporarily or permanently relocating underground facilities for the Contractor's convenience.
- E. The Contractor shall take all prudent steps to make himself aware of the physical condition of the existing underground facilities expected to be encountered.
 - 1. Claims by the Contractor for repair of damages alleged to be the result of the physical condition or faulty installation workmanship of the existing underground facilities, outside of the specified trench width, will in general not be considered by the Owner for extra work payment.

2. For such underground facilities within the specified trench width, claims will be considered if, in the opinion of the Engineer, such damage was unavoidable.

3.6 DISPOSAL OF EXCAVATED PIPE AND CONSTRUCTION DEBRIS

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

3.7 GROUNDWATER CONDITIONS

- A. The Contractor may encounter groundwater at some locations during construction. It is the Contractors responsibility to perform all work related to dewatering at no additional cost to the Owner.
- B. Reference specification Section 02140, Site Drainage and Dewatering.

3.8 PAVEMENT SCHEDULE

- A. Temporary pavement shall be installed weekly. Contractor shall install temporary pavement at intersections and cross trenches within one (1) day of backfilling. Owner reserves the right to request pavement installation at more frequent intervals if weather or other conditions make it necessary. There will be no additional compensation for changes in the paving schedule. All temporary pavement shall remain in-place for a minimum of ninety (90) days.
- B. Locations with water main or drain installed in the Spring/Summer 2024 shall have permanent pavement installed in Spring/Summer 2025.
- C. No bituminous concrete shall be installed between November 15 and April 15th without prior approval from the Owner.

3.9 POLICE DETAILS

- A. Prior to the start of construction, the Contractor shall familiarize himself and adhere to the scheduling requirements of the Nahant Police Department. It is the Contractor's responsibility to arrange for the details directly with the Police Department, as well as receive approval from the Owner regarding the level of police effort required.
- B. The Owner shall pay for all Uniformed Police Officers directly in the amount invoiced by the Chief of Police.

3.10 ROAD AND TRENCH OPENING PERMITS

- A. A Town "Road Opening Permit" will be required for all streets within the project area prior to any construction. A "Trench Opening Permit" will be required for all excavation.
- B. The fees for these permits will be waived by the Owner.
- C. The Contractor is responsible for obtaining and paying for all permits associated with the construction of this project including, but not limited to the street opening permit and excavation and trench safety permit (in accordance with 520 CMR 14.00).

3.11 EXISTING DRAIN LINE REPAIRS

- A. Contractor shall note that the new water main crosses existing drain lines at several locations along the project route.
- B. In the event that a drain line is damaged during construction operations or must be removed and relaid to accommodate the new water main, replacement materials used to repair or relay drain lines shall match the existing pipe in size and materials. Connections to the existing drain line shall be made using a connection fitting specifically made for the pipe size and material in use.

3.12 EXISTING SEWER LINE REPAIRS

- A. Contractor shall note that the new water main crosses existing sewer lines at several locations along the project route.
- B. In the event that a sewer line is damaged during construction operations or must be removed and relaid to accommodate the new water main, replacement materials used to repair or relay sewer lines shall match the existing pipe in size and materials. Connections to the existing sewer line shall be made using a connection fitting specifically made for the pipe size and material in use.

3.13 SEPARATION OF WATER LINES FROM SEWERS

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

- B. Crossings: Water mains and services crossing sewers shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer.
 - 1. At the crossing, one full length of water pipe shall be located so both joints will be as far from the sewer as possible.
- C. Sewer Manholes: No water pipe shall pass through or come in contact with any part of a sewer manhole.

3.14 TEMPORARY BY-PASS PIPING

- A. Prior to the start of construction, a temporary by-pass piping system shall be installed, chlorinated, and tested prior to installing temporary service connections. The contractor shall submit a by-pass piping plan to the Engineer for review and approval prior to installation. A mutually agreeable plan including location, method, and materials of the temporary by-pass piping system shall be the responsibility of the contractor. All components in the temporary by-pass piping system shall be NSF-61 approved.
- B. Prior to mobilization, the Contractor is to coordinate with the Department of Public Works and the Engineer, and is then to locate, uncover, blow-out, and determine the serviceability of all existing gate valves and hydrants which are to be utilized to perform the work. Operation of the gate valves and hydrants will be the responsibility of the Owner and is to be coordinated by the Contractor under the observation of the Engineer.
- C. The Contractor shall provide a reliable temporary by-pass piping system that will service all house service connections, domestic water lines, irrigation lines, fire services, etc.
- D. By-pass piping shall be 6-inch diameter on Atlantic Avenue. By-pass piping shall be 4-inch diameter on Jessie Street and Highland Place. All by-pass piping shall have connections to active water mains on both sides of the street.

3.15 WATER MAIN REMOVAL AND INSTALLATION

- A. The existing cast iron water main shall be removed from the existing trench and shall be replaced with the proposed water main in the existing trench along the entire route of all project areas. Existing cast iron water main and appurtenances removed during installation of the proposed water main and appurtenances shall be properly disposed of.

3.16 ALTERNATES

- A. Additive Alternative A generally includes but is not limited to furnishing and installing approximately 440 linear feet of new 10-inch drainage, including replacement of catch basins and drain manholes in Castle Road to replace existing drainage. Existing drain pipe and drain structures removed during installation of the proposed drain pipe and structures shall be properly disposed of.

3.17 SAFETY CLOTHING

- A. Contractor shall provide all safety clothing to his workers per OSHA requirements and shall ensure that the safety clothing is worn at the construction site.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 GENERAL

1.1 DESCRIPTION

A. Preconstruction Conference:

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

B. Progress Meetings:

1. The Contractor shall be available for progress meetings on site during construction every two weeks, or as determined by the Engineer/Owner, dependent on the status of the project.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

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SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 RELATED WORK

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.3 SUMMARY

- A. The Contractor shall submit to the Owner such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the Owner may request concerning work performed or to be performed under this Contract.
- B. Additional general submission requirements are contained in Paragraph 6.17 of the General Conditions.

1.4 SHOP DRAWINGS AND SAMPLES

- A. The Contractor shall submit to the Engineer for review three (3) clearly legible copies of all shop drawings, catalog cuts, setting schedules and such other drawings as may be necessary for the prosecution of the work in the shop and in the field as required by the Contract Documents. Electronic submittals may be acceptable.
 - 1. Submittals which are incomplete or difficult to read shall be rejected.
 - 2. Deviations from the Contract Documents shall be called to the attention of the Engineer at the time of the first submission of shop drawings and other drawings for consideration.
 - 3. The Engineer's review of any drawings shall not release the Contractor from responsibility for such deviations.
 - 4. Shop drawings shall be submitted with such promptness as to cause no delay in his work or the work of any other Contractor.

SUBMITTALS

- B. When submitted for the Engineers' review, all shop drawings shall bear the Contractor's certification that he has reviewed, checked and approved the shop drawings, that they are in compliance with the requirements of the Contract Documents, and that he has verified all field measurements and construction criteria, materials, catalog numbers and similar data.
- C. All samples called for in the Specifications or required by the Engineer shall be furnished by the Contractor and shall be submitted to the Engineer for his review.
 - 1. Samples shall be furnished so as not to delay fabrication, and to allow the Engineer reasonable time for the consideration of the samples submitted.
- D. Checking of submittals is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents.
 - 1. Any action shown is subject to the requirements of the Contract Documents.
 - 2. Contractor is responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.
- E. The Contractor may only proceed with fabrication and construction for items on returned submittals marked "No Exception Taken" or "Make Corrections as Noted."
 - 1. Resubmit submittals if marked "Rejected", "Revise and Resubmit" or "Submit Specified Item".
- F. The Contractor shall furnish such samples of material as may be required for examination and test.
 - 1. All samples of materials for tests shall be taken according to ASTM Specifications or as provided in the Contract Documents.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01310

CONSTRUCTION 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. The Contractor shall begin work at the site within ten (10) calendar days, from the date of Notice to Proceed. All work shall be completed in accordance with the time of completion specified in the contract documents.
- B. The Contractor shall prepare and submit to ENGINEER for review within 14 days after award of the contract, a construction progress schedule.
- C. It is understood by all parties to this agreement that suitable progress and prompt completion of the work is an essential element of this agreement.
- D. Should the progress of the work for any reason be discontinued, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.
- E. No work shall be done between 5:00 p.m. and 7:00 a.m. nor on Saturdays, Sundays or legal holidays without written permission of the Owner. However, emergency work may be done without permission.
- F. "Day," as used throughout the Contract unless otherwise stated, means "calendar day."

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.

CONSTRUCTION SCHEDULES

1.4 CONTENT OF SCHEDULES

A. Construction Progress Schedule:

1. Show complete sequence of construction by each street.
2. Show projected percentage of complete 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.

1.5 SUBMITTAL REQUIREMENTS

A. For initial submittal of construction schedule and subsequent revisions thereof, furnish three (3) copies of schedule to Engineer. Electronic submittals may be acceptable.

END OF SECTION

SECTION 01505

MOBILIZATION

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Includes: The transportation and storage of all equipment and materials necessary to the Work.

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION

3.1 STORAGE AREA

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

3.2 EQUIPMENT

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

END OF SECTION

MOBILIZATION

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SECTION 01510

TEMPORARY FACILITIES

PART 1 GENERAL

1.1 DESCRIPTION

- A. The work of this Section shall consist of providing the following temporary facilities:
 - 1. Water
 - 2. Sanitary Facilities
 - 3. Drainage

PART 2 PRODUCTS

2.1 TEMPORARY WATER

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

2.2 TEMPORARY SANITARY FACILITIES

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

2.3 TEMPORARY DRAINAGE

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

PART 3 EXECUTION (Not Applicable)

END OF SECTION

TEMPORARY FACILITIES

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SECTION 01545

PROTECTION OF PROPERTY

PART 1 GENERAL

1.1 DESCRIPTION

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

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION

3.1 PROTECTION OF PROPERTY

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

END OF SECTION

PROTECTION OF PROPERTY

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SECTION 01567

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 DESCRIPTION

- A. The work covered by this section of the specifications consists of furnishing all labor, materials, equipment and services, and performing all work required for the prevention of environmental pollution during and as a result of construction operations under this contract.
- B. The requirements set forth in this section of the specifications apply to areas adjacent to wetlands, unless otherwise specifically stated.
- C. All work under this Contract shall be in accordance with the conditions stated herein and in the General Conditions.
- D. All erosion control devices shall be constructed or installed prior to beginning any form of excavation, grading, placement of materials, or general construction.
- E. Insofar as possible, construction activities shall be confined to those areas defined by the plans and specifications. All land resources within the project shall be preserved in their present condition or be restored to a condition after completion of construction at least equal to that which existed prior to work.
- F. The location of storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared, as approved.
- G. Adequate measures for erosion and sediment control such as the placement of baled hay or straw around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.
- H. Any water that is pumped and discharged from an excavation shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.
- I. The pumped water shall be filtered through baled hay, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than one foot per second. The sediment shall be cleared from the channel periodically.

- J. In order to trap sediment and to prevent sediment from clogging drainage systems, baled hay or straw shall be used as shown on the following detail(s) or as directed by the Owner. Care shall be taken to keep them from breaking apart. The bales should be securely staked to prevent overturning, flotation, or displacement. All deposited sediment shall be removed periodically.
- K. Where material or debris has washed or flowed into or has been placed in existing watercourses, ditches, drains, pipes or structures, such material or debris shall be entirely removed and satisfactorily disposed of during progress of the work, and the ditches, channels, drains, pipes, structures, and work shall, upon completion of the work, be left in a clean and neat condition.

PART 2 PRODUCTS

2.1 HAY BALES

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

2.2 SILT FENCE

- A. The silt fence shall consist of a 3-foot wide continuous length sediment control fabric, stitched to a 25-foot wide continuous length support netting, and stapled to preweathered oak posts spaced at a maximum of 7-feet. The oak posts shall be 2-inches by 2-inches by 4-feet 6-inches and shall be tapered. The support netting shall be industrial strength polypropylene. The sediment control fabric should conform to the following properties:
 - 1. Minimum weight of 2.5 oz/sy (ASTM D3776-79)
 - 2. Minimum thickness of 17 mils (ASTM D1777-79)
 - 3. Minimum tear strength of 65 lbs. (ASTM D1117-80)
 - 4. Minimum burst strength of 210 psi (ASTM D3786-80)
 - 5. Minimum coeff. of permeability of 0.0009 cm/sec.
 - 6. Equivalent opening size (EOS) 20 (U.S. Standard Sieve)
 - 7. Water flow rate of 40 gal/min/st.

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

2.3 CATCH BASIN SILT FILTERING SYSTEM

- A. Silt filtering system for catch basins accepting drainage from the site shall be Siltsack as manufactured by ACF Environmental Inc. Richmond, VA. and distributed by A. H. Harris, or approved equal.
 - 1. Manufactured to fit opening of catch basins or drop inlet.
 - 2. Two dump straps attached to the bottom to facilitate emptying the sack.
 - 3. Lifting loops as an integral part of the Siltsack to be used in lifting the Siltsack from the basin.
 - 4. A restraint cord approximately halfway up the sack to keep the sides away from the catch basin walls.
 - 5. Manufactured from woven polypropylene fabric with the following properties:

a.	Grab Tensile	ASTM D-4632 300 lbs.
b.	Grab Elongation	ASTM D-4632 20%
c.	Puncture	ASTM D-4833 120 lbs.
d.	Mullen Burst	ASTM D-3786 800 psi.
e.	Trapezoid Tear	ASTM D-4533 120 lbs.
f.	Apparent Opng.	ASTM D-4751 40 US Sieve
g.	Flow Rate	ASTM D-4491 40 gpm/sf

PART 3 EXECUTION

3.1 NOTIFICATION

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

3.2 AREAS OF CONSTRUCTION ACTIVITY

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

3.3 PROTECTION OF WATER RESOURCES

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

3.4 LOCATION OF STORAGE AREAS

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

3.5 DISCHARGE OF DEWATERING OPERATIONS

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

3.6 PROTECTION OF AIR RESOURCES

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

3.7 SEPARATION AND REPLACEMENT OF TOPSOIL

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

3.8 BALED HAY OR STRAW

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

3.9 SILT FENCE

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

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

PART 1 GENERAL

1.1 DESCRIPTION

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

PART 2 PRODUCTS

2.1 TRAFFIC SIGNS

- A. Contractor shall furnish and maintain traffic control signage throughout the project and at all construction areas. Signs shall be standard signs in compliance with Massachusetts Department of Transportation standards and shall be in place a minimum of 24-hours prior to construction and left in place until removal is authorized by the Engineer. In general, the following signs and devices shall be placed and maintained at each side of all work areas on Town Roads including but not limited to:
 - a. Construction Ahead 1000 feet
 - b. Construction Ahead 500 feet
 - c. Reduce Speed Ahead
 - d. Keep Left/Keep Right
 - e. End Construction
 - f. Left/Right Lane Closed Ahead
 - g. Safety Barrels with flashers
 - h. Road Closed
 - i. Road Closed Except to Local Traffic
 - j. Detour directions
 - k. Road barricades

2.2 BARRICADES

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

2.3 FLASHERS

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

2.4 TEMPORARY BRIDGING

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

2.5 DETOURS

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

2.6 MISCELLANEOUS

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

PART 3 EXECUTION

3.1 CONTROL OF TRAFFIC

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

3.2 ACCESS TO PROPERTY AND UTILITIES

- A. The Contractor shall arrange his operations to provide access to properties along the street including temporary bridges to driveways, and provide access to fire hydrants, manholes, gate boxes, or other utilities.
 - 1. Whenever any trench obstructs traffic in or to any public street, private driveway, or property entrance, the Contractor shall take such steps as required to maintain necessary traffic and access including temporary bridging if required.
 - 2. The Contractor shall confine his occupancy of public or traveled ways to the smallest space compatible with the efficient and safe performance of the work contemplated by the Contract.

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

END OF SECTION

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SECTION 01572

UNIFORMED POLICE OFFICERS

PART 1 GENERAL

1.1 DESCRIPTION

- A. The Contractor shall make all arrangements with the Local Chief of Police for the services of Uniformed Police Officers.

PART 2 PRODUCTS

2.1 UNIFORMED POLICE OFFICERS

- A. The Chief of Police will assign Uniformed Police Officers from his department in the quantity and at the location(s) as determined to be necessary by the Chief of Police and as Uniformed Police Officers are available.

PART 3 EXECUTION

3.1 ARRANGEMENTS

- A. The Contractor shall make all arrangements with the Chief of Police for the services of Uniformed Police Officers. If, in the opinion of the Chief of Police, Uniformed Police Officers are required for the protection of persons and control of traffic, the Contractor shall be responsible for making all arrangements with the Chief of Police as may be required.

3.2 PAYMENT

- A. The Owner shall pay directly for all Uniformed Police Officers in the amount invoiced by the Chief of Police. Invoices shall be sent directly to the Owner. Contractor shall keep a daily log of Uniformed Police Officers on-site including name, badge number, and hours on-site. Daily log shall be submitted to Engineer with monthly payment requisition.

END OF SECTION

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SECTION 01610

DELIVERY, STORAGE AND HANDLING

PART 1 GENERAL

1.1 SUMMARY

- A. This section specifies the general requirements for the delivery, handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.2 TRANSPORTATION AND DELIVERY

- A. Transport and handle items in accordance with manufacturer's printed instructions.
- B. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from Engineer.
- C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- D. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- E. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the Contractors' normal construction operation or those of subcontractors and will not interfere with the necessary flow of traffic.
- F. Provide equipment and personnel to unload all items delivered to the site.
- G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by others (i.e. Owner, other Contractors), perform inspection in the presence of the Engineer. Notify Engineer verbally, and in writing, of any problems.

1.3 STORAGE AND PROTECTION

- A. Store and protect products in accordance with the manufacturer's printed instructions, with seals and labels intact and legible. Arrange storage to permit access for inspection.
 - 1. Maintain packaged materials with seals unbroken and labels intact and legible until time of use.

DELIVERY, STORAGE AND HANDLING

2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.
- B. The Engineer may reject as non-complying such material and products that do not bear identification satisfactory to the Engineer as to manufacturer, grade, quality and other pertinent information.
- C. Store loose granular materials on solid flat surface in a well-drained area. Prevent mixing with foreign matter.
- D. Mechanical equipment subject to damage by the atmosphere if stored outdoors, shall be stored in a building with a controlled environment. The building may be a temporary structure on the site or a building off the site.
- E. PVC pipe shall be covered to protect it from UV degradation.

1.4 QUALITY ASSURANCE

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

1.5 REPAIRS AND REPLACEMENTS

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

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 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 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.

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION

3.1 CLEANING UP

- A. During its progress, the work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.

CONTRACT CLOSEOUT

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

3.2 RESTORATION

- A. The Contractor shall restore or replace, when and as directed by the Engineer, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations.
 - 1. To this end, the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work.
 - 2. Suitable materials, equipment, and methods shall be used for such restoration, or as required in other divisions of this Specification.

B. In restoring the disturbed areas the Contractor shall:

1. Replace to an equivalent depth any loam that has been removed during the excavation.
2. Remove from the property and legally dispose of in an approved fashion all trees, brush, and other items that the Contractor has cut in order to do his work.
3. Remove from the property upon completion of the work thereon, all excess materials of construction such as stone, pipe, concrete block, gravel, etc., that the Contractor may have stockpiled for use during the course of the work.
4. Leave the land in a smooth, even condition. All ruts, holes or other undesirable grading conditions which resulted from work under this Contract shall be filled and the area so graded to eliminate ponding.
5. All drainage course(s) shall be restored to their pre-existing condition or better.
6. Reset all public or private monuments, iron pipes, or other types of property line and geodetic markers damaged or disturbed by operations under this Contract. This work shall be done by a licensed land surveyor at no additional cost.
7. Repair, reset or replace as directed all pipes, walls, utilities, fences, railings, stone walls, signs, etc., and ornamental or utilitarian domestic accessories, such as, but not limited to, arbors, fireplaces, sheds and incinerators, or other surfaces, structures, or property which may have been damaged, either directly or indirectly by his operations under this Contract.
8. Restore to a condition at least equal to that in which they were found immediately prior to the beginning of construction all sidewalks, gutters, driveways, curbs, stone walls, concrete retaining walls and fences which have been damaged by the Contractor's operations.

3.3 FINAL INSPECTION

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

3.4 GUARANTEES

- A. The Contractor shall take notice of special guarantees required in the technical Sections of these Specifications.

CONTRACT CLOSEOUT

1. If, in the opinion of the Owner, any item requires excessive maintenance during guarantee periods, the item shall be considered defective and the Contractor shall correct the defects.
2. All defects so corrected shall be at the expense of the Contractor.

END OF SECTION

SECTION 02015

TEST PITS

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 RELATED WORK

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

- A. Section 02140, Site Drainage and Dewatering
- B. Section 02222, Earthwork

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 COORDINATION WITH UTILITY OWNERS

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

3.2 EXCAVATION

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

3.3 MEASUREMENT

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

3.4 RESTORATION

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

END OF SECTION

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SECTION 02140

SITE DRAINAGE AND DEWATERING

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 01567, Environmental Protection
 - 2. Section 02222, Earthwork
 - 3. Section 02611, Ductile Iron Pipe and Fittings

1.3 SUBMITTALS

- A. None required.

PART 2 PRODUCTS (Not used)

PART 3 EXECUTION

3.1 INSTALLATION

- A. To ensure proper conditions at all times during construction the Contractor shall provide and maintain ample means and devices with which to remove and dispose of all water entering trenches and other excavations.
 - 1. The Contractor shall pitch the ground around the excavation to prevent water from running into excavated areas and to prevent damage to other structures or work on adjacent property.

2. The Contractor shall remove immediately any surface or seepage water or water from sewers, drains, creeks, or other sources, which may accumulate during the excavation and construction work.
- B. Excavations shall be kept dry until the structures, pipes and appurtenances, to be built or installed therein, have been completed and backfilled to such extent that they shall not float or otherwise be damaged by water in the excavation.
1. In no event shall water rise to cause unbalanced pressure on the pipe or other structures. The Contractor shall prevent flotation of the pipe or structures.
 2. Pipe, masonry and concrete shall not be placed in water. Water shall not submerge new masonry or concrete within four (4) hours after placement.
- C. Sufficient stand-by pumping equipment shall be installed and mounted for immediate use in case of emergencies. The Contractor shall be responsible for the adequacy of their dewatering equipment and system in controlling the water and for protection to adjacent public and private property from damage. Any damage to permanent work or existing property resulting from the failure of the Contractor to provide an adequate dewatering system shall be repaired by the Contractor at their expense.
1. Sump pumps shall be installed with adequate filters to prevent loss of fine grained soils.

3.2 DISPOSAL OF DRAINAGE WATER

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

END OF SECTION

SECTION 02160

SUPPORT OF EXCAVATION

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 DEFINITIONS

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

1.3 RELATED WORK

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

1.4 QUALITY ASSURANCE

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

1.5 STANDARDS

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

1.6 SUBMITTALS

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

PART 2 PRODUCTS

2.1 DESIGN

- A. Design a shoring system which will safely and adequately prevent collapse of adjacent materials and which will permit construction of the Work to the arrangement shown on the Drawings.
- B. All shoring systems shall be designed so as to support all vertical and lateral loads and other surcharge loads imposed on the system during construction, including earth pressures, utility loads and other surcharged loads in order to provide safe and expeditious construction of the permanent structures and prevent movement and/or damage to adjacent soil, buildings, structures and utilities.

- C. Secure all needed approvals, including those of governmental agencies having jurisdiction and of adjacent property owners if required, at no additional cost to the Owner.

2.2 MATERIALS

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

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

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

3.2 INSTALLATION

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

3.3 SHEETING LEFT IN PLACE

- A. Sheeting left in place, for the purpose of preventing injury to structures, utilities or other property, shall be cut-off 3 feet below finished grade.

1. The right of the Engineer to order sheeting left in place shall not be construed as creating any obligation on his part to issue such orders. His failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise growing out of a failure, on the part of the Contractor, to leave in place sufficient sheeting to prevent movement of the ground.

3.4 SHEETING REMOVED

- A. All sheeting not left in place shall be carefully removed in such manner as to not endanger the construction or other structures, utilities, or property.
 1. All voids left or caused by withdrawal shall be immediately refilled with approved material, and compacted with tools especially adapted to that purpose.
 2. Vibratory extraction methods shall be used only when it can be demonstrated that settling of pipe and structures will not occur. If such settling occurs, it shall be corrected at the Contractor's expense.

3.5 TRENCH BOX OR SHIELD

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

END OF SECTION

SUPPORT OF EXCAVATION

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SECTION 02222

EARTHWORK

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02140, Site Drainage and Dewatering
 - 2. Section 02160, Support of Excavation
 - 3. Section 02227, Rock Removal
 - 4. Section 02611, Ductile Iron Pipe and Fittings
 - 5. Section 02640, Water Main Valves and Appurtenances
 - 6. Section 02930, Loam and Seed

1.3 SITE INVESTIGATION

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

1.4 QUALITY ASSURANCE

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

1.5 PROTECTION OF PROPERTY AND UTILITIES

- A. Extreme care shall be exercised to prevent damage to existing trees, shrubs, utilities, walls, sidewalks, fences and private property.
 - 1. Any damage to these items as a result of work performed by the Contractor shall be repaired by the Contractor at his own expense.
 - 2. Existing property boundary markers, control points and datum elevation markers or benchmarks shall be preserved.
 - a. All such items which are displaced or destroyed by the Contractor shall be replaced by a registered Engineer or Land Surveyor, as required, with all expenses paid by the Contractor.
- B. Utility agencies shall be contacted and advised of proposed work prior to the start of work by the Contractor.
 - 1. Notify Dig Safe.
 - 2. Obtain information from the proper sources and authorities concerning locations of all utilities within the scope of this work.
 - 3. If and when encountered, utilities shall be supported and protected, and the Engineer shall be notified. Ample time shall be allowed for entrance and taking such measures as may be required for the continuance of such services by the utility owner.
 - 4. Rules and regulations governing the respective utilities shall be observed. The Contractor's responsibilities with respect to utility locations, protection, interferences and relocations shall be as further specified in Section 01013, Facility Interferences with Proposed Work.

1.6 REFERENCE STANDARDS

- A. The Contractor shall comply with the provisions of the following agencies as they apply to this project.

1. Associated General Contractors of America, Inc. (AGCA) "Manual of Accident Prevention in Construction."
2. Occupational Safety and Health Administration, United States Department of Labor Requirements
3. ANSI "Safety Regulations for Construction and Demolition."
4. American Society for Testing & Materials (ASTM)
5. American Water Works Association Standards

1.7 STANDARDS

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

1.8 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300, Submittals.
- B. Testing and Samples:
 1. Test reports on backfill materials, moisture density tests, in place density tests (ASTM D 1557 and D 1556).
 2. Representative backfill and bedding samples and gradation tests (ASTM D 422).
 3. Tests shall be in conformance with Paragraph 3.15; Compaction Requirements and Testing as specified herein.

1.9 TRAFFIC

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

PART 2 PRODUCTS

2.1 GENERAL

- A. Except as specified for pipe bedding, pipe cover, roadway subbase, and refill for rock and unsuitable materials, backfill materials may be as follows:

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

2.2 PIPE BEDDING AND COVER MATERIAL

A. Ductile Iron Pipe:

1. Gravel borrow shall be a granular material, well graded from fine to coarse, with gradation as specified in Paragraph 2.5 of this specification section, obtained from approved natural deposits and unprocessed except for the removal of unacceptable material and stones larger than the maximum size permitted.
2. It shall not contain vegetation, masses of roots, or individual roots.
3. It shall be free from loam and other organic matter, clay, and other fine or harmful substances.

B. HDPE Pipe or Copper Tubing:

1. Sand borrow shall consist of clean inert, hard, durable grains of quartz or other hard durable rock free from loam or clay, surface coatings and deleterious materials.
2. The allowable amount of material passing a No. 200 sieve as determined by AASHTO shall not exceed 10 percent by weight. The maximum particle size shall be 3/8 inch.

2.3 CONCRETE SAND

- ### A.
- Concrete sand shall meet ASTM C-33 for fine aggregate.

2.4 STRUCTURAL FILL

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

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

2.5 GRAVEL BORROW

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

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

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3-inch	95-100
1/2 inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10

2.6 PROCESSED GRAVEL FOR ROADWAY SUBBASE

- A. Shall meet the requirements of the Standard Specifications, latest edition, M1.03.1.

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

2.7 CRUSHED STONE (Hydrant Drains)

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

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

PART 3 EXECUTION

3.1 TRENCH EXCAVATION

- A. The Contractor shall make all excavation in earth and in rock, necessary or incidental to the proposed construction under the terms of this Contract and as herein specified or indicated on the Drawings.
1. All trench excavation shall be accomplished by open cut method.
 2. All excavation shall be made in such manner and to such widths as will give ample room for properly installing, constructing and inspecting pipe lines and structures they are to contain.
 3. The width of trenches shall be sufficient to allow thorough compacting of the refill adjacent to the lower quarters of the pipe. At pipe joints such additional width and depth shall be excavated as is necessary to give ample room for properly making and inspecting the pipe joint.
 4. Bracing and support of all trench excavation shall meet all requirements of Local and State ordinances and OSHA regulations.
 - a. Sheet piling and bracing, or the use of a steel support box shall be used where required to maintain a safe working condition and provide protection from collapse of the trench walls.
 5. During excavations, material determined by the Engineer to be suitable for backfilling, shall be placed a sufficient distance from the banks of the trench to avoid slides or cave-ins. Unsuitable material shall be disposed of as specified in Paragraph 3.4 and replaced with surplus suitable material and gravel borrow to the extent necessary.

6. Should conditions make it impractical or unsafe to place material along the trench, it shall be hauled and stored at a location provided by the Contractor. When required, it shall be re-handled and used in backfilling the trench. No additional compensation will be made for re-handling this material.
7. Pipe trenches shall be backfilled as soon as practical after the pipes have been laid, jointed and inspected by the Engineer. The extent of excavation open at any one time shall be no more than 50 linear feet of trench during working hours and no more than 20 linear feet during non-working hours.

3.2 EXCAVATION CLASSIFICATION

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

3.3 TRENCH EXCAVATION IN PAVED ROADWAYS

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

3.4 UNSUITABLE MATERIAL

- A. All pipes and structures are to be laid on a stable foundation. If material at grade is determined to be unsuitable by the Engineer, the Contractor shall excavate a further depth and/or width, and refill with an approved material. Refill material shall be structural fill, gravel borrow or crushed stone as determined by the Engineer.
 - 1. Where fine sand and silt are encountered at the bottom of the trench, it shall be the option of the Engineer to require a 6-inch compacted depth of concrete sand meeting ASTM C-33 for fine aggregate to be installed beneath the pipe bedding to the full width of trench.
 - 2. Payment width limits shall be the same as specified for trench excavation, unless an additional width of trench is ordered by the Engineer.
 - 3. Any excavation in excess of the amount ordered by the Engineer shall be backfilled and compacted with an approved granular material, at the Contractors expense.

3.5 ROCK REMOVAL

- A. See Specification Section 02227, Rock Removal.

3.6 DEWATERING

- A. See Specification Section 02140, Site Drainage and Dewatering.

3.7 BACKFILLING AND COMPACTING

- A. Backfill shall be placed in uniform layers. Each layer shall be thoroughly compacted by tamping or vibrating with mechanical compacting equipment.
 - 1. Care shall be taken to compact the backfill materials throughout the full width of the excavation and beneath all pipes and structures.
 - 2. The backfilling of trenches shall proceed as soon as the laying of the pipe(s) or installation of the structures will allow.
 - 3. Pipe bedding shall be required 6-inches below and 6-inches above the top of the pipe.
 - 4. Pipe bedding shall be placed at least 12-inches beyond the widths of a utility structure foundation.
 - 5. After a pipe has been placed and bedded, the trench shall be filled to the centerline of the pipe with pipe bedding and compacted.

- a. Material under and around the pipe shall be carefully and thoroughly compacted and tamped with approved compacting equipment.
- 6. For water pipes, from the centerline of the pipe to a point 6-inches above the top of the pipe, the fill shall be pipe bedding (structural fill). For drain pipes, from the centerline of the pipe to a point 12-inches above the top of the pipe, the fill shall be pipe bedding (structural fill).
- B. Placement of Backfill Above the Pipe Bedding
 - 1. Above the pipe bedding, backfill shall be suitable material from the excavation or, if ordered by the Engineer, gravel borrow.
 - a. This backfill shall be placed in layers 12-inch lifts . Each layer shall be thoroughly compacted.
 - b. This backfill shall be placed up to the bottom of materials specified to be placed for surfacing requirements.
- C. Roadway Trench
 - 1. The following additions shall apply specifically to trenches within roadways:
 - a. The top twelve (12) inches of trench refill, roadway sub-base, shall be comprised of processed gravel furnished, placed, graded and compacted by the Contractor. This material shall be placed during the backfilling operation.
 - b. The Contractor shall fine grade the surface, apply dust control treatment and maintain the surface in a condition which will allow safe vehicular traffic until resurfacing is placed.
 - 2. The length of unsurfaced trench shall not exceed 500 linear feet, and shall be maintained to the Owner's satisfaction, in a condition to allow safe vehicular traffic.
 - a. If the trench is not maintained in a satisfactory condition, the allowable length of unsurfaced trench shall be reduced accordingly.

3.8 TRENCH SIZE

- A. Trenches shall be excavated to the necessary width and depth for proper laying of pipe and placement of concrete and other materials.
 - 1. Widths of trenches shall be as shown on the drawings.

2. The depth of trench shall be a minimum 6-inches below the pipe barrel, or as shown on the Drawings.

3.9 STRIPPING TOPSOIL

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

3.10 EXCAVATION NEAR EXISTING STRUCTURES AND UTILITIES

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

3.11 PROTECTION OF PROPERTY

- A. The Contractor shall, at his own expense, preserve and protect from injury all property either public or private along and adjacent to the line of work, and be responsible for and repair any and all damage and injury thereto, arising out of or in consequence of any act or omission of the Contractor.

1. All existing pipes, culverts, poles, wires, fences, mailboxes, stone walls, curbs, bounds, etc., shall be temporarily removed, supported in place or otherwise protected from injury, and shall be restored to at least as good condition as that in which they were found immediately prior to the start of work.
2. Lawns, shrubs, bushes, planting beds and decorative trees disturbed or damaged shall be restored to a condition equal to that found prior to the start of construction, either by temporary transplant or replacement in kind, except as otherwise indicated on the Drawings.

3.12 SAFETY AND ACCOMMODATION

- A. The Contractor shall provide, at his own expense, suitable bridges over trenches where required for the accommodation and safety of the traveling public, and provide facilities for access to private driveways for vehicular use.
 1. He shall erect suitable barriers around the excavation to prevent accidents to the public and shall place and maintain during the night, sufficient lights on or near the work.
 2. A space of twenty (20) feet shall be left so that free access may be had at all times to fire hydrants and proper precautions shall be taken so that the entrances to fire hydrants and fire stations shall not be blocked or obstructed.

3.13 DETOURS

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

3.14 UNIFORMED POLICE OFFICERS

- A. The Contractor shall make all arrangements with the local Police Chief and/or the State Police for the services of uniformed police officers.
 1. If, in the opinion of the State Police, Police Chief or the Owner, uniformed police officers are required for protection of persons and control of traffic, the Contractor shall be responsible for making all arrangements for said uniformed police officers as may be required.
 2. See Section 01572, Uniformed Police Officers.

3.15 COMPACTION REQUIREMENTS AND TESTING

- A. All backfill materials shall be thoroughly compacted by rolling, tamping or vibrating with approved mechanical or pneumatic compacting equipment so that pipe, structures, paving and other construction will not settle at the time of construction or in the future. The responsibility for thorough compaction is that of the Contractor irrespective of methods of backfill and depth of backfill layers placed.
- B. All percentages of compaction specified herein shall be of the maximum dry density at the optimum moisture content as established by Method D of AASHTO Standard T180 (ASTM D1557) (Modified Proctor) and verified by AASHTO Standard T147 (ASTM D1556). When the term "thoroughly compacted" is used in these specifications, it shall mean compaction to at least 95% of the maximum density of the soils at optimum moisture content.
- C. The following numbers and types of soil tests shall be made where directed by the Engineer. These tests shall be made by qualified personnel of an independent testing laboratory, acceptable to the Engineer and paid by the Contractor. Three copies of all test results shall be delivered to the Engineer.
 - 1. Particle-Size analysis of Soils and Backfill Materials in accordance with ASTM D422. A total of 5 satisfactory tests.
 - 2. Moisture-Density Relationship of soil in accordance with ASTM D1557, Method D. A total of 5 satisfactory tests.
 - 3. In-Place Density Tests of materials in accordance with ASTM D1556. One in- place density test shall be performed every 300 linear feet, or as directed by the Engineer. Compaction tests will be taken at random on compaction layers below and at finished surfaces.
 - 4. Failed tests shall be repeated at the Contractor's expense.
- D. The Owner reserves the right to have additional compaction tests performed by an independent laboratory with testing costs borne by the Owner, except that failed tests shall be repeated at the Contractor's expense.
- E. If any of the field density test results fail to met the density as specified herein for the earthwork involved, then the Contractor shall remove all of the earthwork in that portion of the work involved as determined by the Engineer, and shall replace it in accordance with these Specifications to the required density. After the work is replaced, additional field density tests will be made by an independent testing laboratory retained by the Owner, and the Contractor shall reimburse the Owner for all costs for such additional testing.

1. Compaction shall be to the following densities:

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

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

3.16 DISPOSAL OF SURPLUS AND UNSUITABLE EXCAVATED MATERIAL

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

3.17 DUST CONTROL

- A. The Contractor shall perform dust control operations.

3.18 CLEAN-UP

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

END OF SECTION

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SECTION 02227

ROCK REMOVAL

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 RELATED WORK

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

1.3 DEFINITIONS

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

1.4 STANDARDS

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

1.5 QUALITY ASSURANCE

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

1.6 SUBMITTALS

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

ROCK REMOVAL

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 NOTIFICATION

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

3.2 LIMITS OF EXCAVATION IN ROCK

- A. Rock shall be removed to the limits given in the measurement and payment description for the Rock Excavation pay item.
 - 1. Where excavation is carried beyond the above determined limits, the additional space shall be backfilled at the Contractor's expense with material as specified, and approved by Owner.

3.3 BLASTING

- A. Pre-Blast Survey: Prior to any blasting, the Contractor shall submit a pre-blast survey.
 - 1. The survey shall satisfy the insurance requirements of the Contractor and be acceptable to the Contractor's insurance carrier, as well as provide data to assess damages to personal property and real estate due to blasting operations.
 - 2. The survey shall be complete as warranted by the nature of the work.
- B. Take all precautions necessary to warn and/or protect any individuals exposed to his operations. Such precautions shall include but not be restricted to the following:
 - 1. Present written certificate of insurance showing evidence that his insurance includes coverage for blasting operations, before doing any blasting work.

2. Make necessary arrangements as may be required by the applicable Federal, State, County or Municipal codes, rules, regulations and laws, and shall be responsible for compliance.
3. Obtain a permit from the local authorities to perform blasting operations.
 - a. The Engineer shall be notified in writing that such permit has been obtained.
4. Schedules for blasting shall be thoroughly coordinated with the proper authorities – Federal, State and Local.
 - a. No blasting shall be done unless the Contractor has notified all concerned parties that he may blast.
 - b. The Contractor shall also notify any commercial installation in the immediate area whose operations or instrumentation may be affected by blasting, at least twenty- four (24) hours prior to blasting operations.
5. Seismographic recordings shall be made of all blasting operations on the project by a qualified testing agency hired and coordinated by the Contractor.
 - a. A copy of these recordings shall be made available to the Engineer.
6. Blasting shall be performed by persons who are licensed to use explosives.
7. The Contractor shall keep an accurate record of each blast and submit a copy to the Engineer. The record shall show the date, time, exact stationing of the blast, the depth and number of drill holes, and kind and quantity of explosive used, and any other data required for a complete record.
8. The Contractor shall be fully responsible for damages caused by his blasting operations.
9. If rock below the limits of excavation is shattered by blasting, caused by holes drilled too deep, too heavy a charge of explosives or any other circumstance due to blasting, the shattered rock shall be removed and the void refilled with gravel borrow at the expense of the Contractor.
 - a. Gravel borrow shall be as specified in Section 02222, Earthwork.

3.4 DISPOSAL AND REPLACING OF ROCK

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

END OF SECTION

SECTION 02252

PRECAST CONCRETE MANHOLES

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes all labor, equipment, appliances, and materials required for construction of precast storm drain manholes, complete and in place, in accordance with the Drawings and Specifications and as directed.
- B. All manholes shall have precast concrete base sections unless a cast-in-place concrete base with precast concrete risers or special structure is specifically indicated on the Drawings.

1.2 RELATED WORK

- A. DIVISION 1 – GENERAL REQUIREMENTS
- B. Section 02222 – EARTHWORK

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Section 01300 – SUBMITTALS.
 - 1. Complete shop drawings for all precast manhole sections, cast iron frames and covers and appurtenances. Cast iron frames and covers shall be from a United States manufacturer.
 - 2. Prior to fabrication, submit shop drawings showing details of precast monolithic base sections, risers, eccentric cone manhole tops and flat slab manhole tops, joints and gaskets, construction details, tolerances, and other information as required by the Engineer.
 - 3. Submit manufacturer's recommended installation procedures for informational purposes.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Precast Bases and Risers: Except as otherwise indicated, precast reinforced concrete manhole bases and risers shall be 48 inches, 60 inches, 72 inches, or 96 inches, and with top sections of types indicated or as directed; manhole sections shall conform to the requirements of ASTM C478, latest revision, except as modified herein and/or on the drawings. Each manhole section shall be constructed with a bell-and-spigot or tongue-in-groove joint. The manhole sections shall be manufactured by the centrifugal, roller suspension or vertical cast process; workmanship and methods shall be in accordance

PRECAST CONCRETE MANHOLES

with the best practices of modern shops for this type of work. The height and diameter of manhole bases shall be as required to accommodate size of pipe used, as approved. The manhole risers shall be available in 2, 3, and 4-foot lengths; manhole tops of the eccentric cone type shall be 3 or 4 foot lengths, with 24-inch inside diameter opening at top, unless otherwise noted, as shown in the details; manholes larger than 4 feet in diameter at the base shall be reduced in diameter to 4 feet at the top riser section unless noted otherwise on the plans; manhole tops of the flat slab type, where space restrictions exist or where directed, shall be not less than 8 inches thick and reinforced as indicated, and shall have an opening having an inside diameter as specified above. Polypropylene coated ½-inch grade 60 steel rod manhole steps shall be provided in each manhole base, riser and cone type top and shall be integrally cast in the bases, risers and tops. Furnish test results demonstrating step capability to resist pullout force of 2200 pounds. Manhole steps shall be arranged in the manhole sections so as to provide steps approximately 12-inches on center for full height of installation of each manhole. Manhole bases and risers shall have the wall thicknesses as stated in the Drawings; cone type units shall taper to a minimum wall thickness of 8-inches at top.

- B. All exterior concrete surfaces shall be coated with Coal Tar Epoxy Coating with minimum solids content by volume of 73 percent, maximum V.O.C. of 1.83, a dry film thickness per coat between 8.0 and 10.0 mils, and a two coat minimum.
- C. Interior coating for force main discharge manholes shall have H2S resistant, epoxy coating over all concrete and masonry. Coating shall be Quadex Structure Guard Epoxy, Sauereisen 501/210x Epoxy, or approved equal.
- D. Frames and covers shall be heavy-duty Type A Massachusetts Standard and conform to the "Construction Standards" and "Standard Specifications for Highways and Bridges", of the Commonwealth of Massachusetts. All frames shall have a minimum clear opening of 24 inches. Submit drawings to Engineer for approval before fabrication. Iron castings shall be true to pattern in form and dimensions, free from pouring faults, sponginess, cracks, blow-holes and other defects affecting the strength and value for the service intended. Frames and covers to have factory applied bituminous coating to prevent corrosion. The finished coating shall be tough and tenacious when cold and not brittle or with any tendency to scale off under seasonable temperature changes. Covers shall bear the badging classification of "DRAIN" where applicable.
 - 1. Frames and covers shall be manufactured by a United States manufacturer who can demonstrate at least five years of successful experience.
 - 2. Frames and covers to be as manufactured by EJ, Neenah Foundry Company, Campbell Foundry Company or equal.
- E. Cast-in-place concrete manhole bases, special structures and invert tables shall be constructed as indicated and in accordance with the materials and construction methods and provisions of Section 03300. Manhole base slabs shall have a minimum thickness of 6 inches for risers up to and including 48 inches in diameter and 8 inches minimum thickness for diameters larger than 48 inches.
- F. Jointing: Ends of each length of manhole riser, the bottom end of manhole tops of the cone type, base slabs, and the tops of monolithic bases shall be provided with bell-and-

spigot or tongue-and-groove ends of concrete formed on machined rings to insure accurate joint surfaces. Jointing shall be O-ring gaskets or butyl rubber molded sealants.

All joints shall be provided so as to be watertight under all conditions of service. The ends of base, riser, and cone sections to be jointed using neoprene "O-ring" type joints shall be designed to enclose the gasket on four surfaces when the joint is in its final position.

- G. Gaskets for sealing joints using the "O-ring" type gaskets shall conform to ASTM C443, latest revision, and shall be of rubber of a special composition having a texture to assure a watertight and permanent seal and shall be the product of a manufacturer having at least five years experience in the manufacture of neoprene gaskets for pipe joints, or shall be vulcanized butyl rubber sealants meeting or exceeding Federal Specifications SS-S-210, latest issue.

1. Each gasket shall be a continuous ring of round solid cross-section having smooth surfaces free from blisters, porosity and other imperfections. The joint sealing gasket shall be of a composition and texture which shall be resistant to sewage, industrial wastes including gasoline, oils and groundwater, and which will endure permanently under the conditions likely to be imposed by this use. The tensile strength shall be at least 1,200 psi. The elongation shall be such that 2-inch gauge marks shall stretch to not less than 9 inches. The compression set (constant deflection) shall not exceed 25 percent of the original gauge length. The tensile strength after accelerated aging shall be not less than 80 percent of the original strength.
2. The butyl rubber sealant shall have a self adhesive nature and shall have a diameter of 1 inch and shall be furnished in coils. The sealant shall meet the following properties:

DESCRIPTION	SEALANT PROPERTY
Base	Vulcanized Butyl Rubber
Percent of solids	100%
Shore "A" Durameter:	
Initial	10
Aged	20
Adhesion to clean surfaces	Excellent
Temperature Range:	
Application	-20 degrees F to 120 degrees F
Service	-65 degrees F to 200 degrees F
Water Absorption after 14 days immersion:	Less than 5%
Chemical Resistance after 7 days immersion in 5% Potassium Hydroxide and 5% Hydrochloride Acid	Excellent
Resistance to Water and Organic Solvents	Excellent
Resistance to Shock, Heat, and Cold	Excellent
Color	Black
Shelf Life	Excellent
Elongation	
Initial	30%
2 weeks at 190 deg F, drying	250%
2 weeks in water	300%

DESCRIPTION	SEALANT PROPERTY
Weather Resistance	Excellent
Moisture Diffusion Resistance	Excellent
Specific Gravity	1:18
Flash Point	None
Fire Point	Over 620 degrees F

- H. Concrete: The concrete for precast manhole sections shall have an average strength of not less than 4,000 psi at 28 days. Strength shall be determined by tests on 6-inch by 12-inch vibrated test cylinders cured in the same manner as the manhole sections, cores cut from the manhole sections, or by other approved methods. Not less than two concrete strength tests shall be made for each 100 linear feet of manhole sections and the test results submitted to the Engineer. Testing may be conducted at the manufacturer's plant or at an approved testing laboratory and shall be the responsibility of the Contractor, at no additional expense to the Owner.
1. Cement shall be moderate heat-of-hydration Portland cement conforming to ASTM C150, latest revision, Type II.
 2. Absorption, determined by absorption test described in ASTM C478, latest revision, shall not exceed 8 percent of dry weight.
- I. Mortar (grout), for sealing mortar-type joints or grouting field made pipe openings, shall be a non-shrink type mortar or grout which shall be a factory-mixed ready-to-use product containing especially prepared aggregate, cement and sand and other components which will produce a mortar or grout with properties to counteract shrinkage, increase density, withstand impact, improve workability, produce watertight joints, and which will be suitable for jointing around pipes entering manholes.
- J. Manhole steps shall be comprised of ½-inch grade 60 steel reinforcement rod encased in polypropylene copolymer plastic.
1. Steps shall have a tread width of 14 inches.
 2. Furnish test results demonstrating step capability to resist pull out force of 2200 pounds.

PART 3 – EXECUTION

- 3.1 Inspection: Acceptance of precast reinforced concrete manhole sections will be made on the basis of plant tests, material tests, and inspection of the completed product, in accordance with the requirements of ASTM C478, latest revision, with the following modifications.
- A. Manhole sections shall not be shipped for at least five days after manufacture when cured by subjecting them to thoroughly saturated steam at a temperature between 100 and 150 degrees F for a period of not less than 8 hours, or when necessary, for such additional time as may be required to enable the manhole sections to meet specification requirements.
 - B. All manhole sections will be inspected upon delivery; manhole sections which do not

PRECAST CONCRETE MANHOLES

conform to specification requirements will be rejected and shall be removed immediately from the site by the Contractor. Furnish all labor and facilities necessary to assist the Engineer in inspecting the material.

- C. All manhole sections which have been damaged after delivery, and manhole sections installed in the work which are found to be damaged will be rejected and shall be removed and replaced by the Contractor with new, sound and approved material, at no additional expense to the Owner. At the time of inspection, the surfaces of the sections shall be dense and close-textured. Cores shall serve as a basis for rejection of manhole sections if poor bond or reinforcement is exposed.
- D. The quality of all materials, processes of manufacture, and the finished manhole sections shall be subject to inspection and approval of the Engineer. Such inspection may be made at the place of manufacture and/or on the site, and the manhole sections shall be subject to rejection at any time because of failure to meet any of the specification requirements, even though sample manhole sections may have been accepted as satisfactory.

3.2 HANDLING

- A. Each manhole section shall be handled into its position in the trench only in such manner and by such means as recommended by the manufacturer of the manhole sections, and as approved. Provide all necessary slings, straps and other devices for the safe and satisfactory handling and support of the manhole sections during lifting, installation and final positioning of the sections. Lifting holes may be permitted provided suitable rubber or concrete stopper or other approved devices are provided for plugging and sealing the holes and watertight, all as approved.

3.3 INSTALLATION OF PRECAST CONCRETE MANHOLES

- A. Manhole sections shall be installed using approved type neoprene "O-Ring" type gasket or butyl rubber sealants for sealing joints of manhole sections; jointing shall be performed in accordance with the pipe manufacturer's recommendations, and as approved. Manhole sections shall be installed level and plumb. Manholes shall be constructed on a 12-inch compacted crushed stone or gravel base as indicated. Water shall not be permitted to rise over newly made joints until after inspection as to their acceptability. All jointing shall be done in a manner to insure watertight joints. The cast-iron manhole frames shall be set on the manhole top in full bed of mortar to the finished grade and the outside of frame shall be completely encased in cement-mortar, as specified and as indicated. Opening in precast manhole sections to extent indicated on the drawings to receive entering pipes shall be made at the place of the manufacturer; where opening cannot be determined they shall be cut in the field. Depending upon the type of pipe seals to be furnished, pipe openings shall be provided with manhole seals of proper sizes to accommodate pipe sizes and shall be cast into the manhole at the time of manufacture and the following type seals or similar product shall be provided (Interpace "New Lok Joint Flexible Sleeve", L & L Concrete Products "A-Lok Manhole Sleeve", or "Press Wedge II" by Pre-Seal Basket Corporation). Field applied seals shall be "K or N Seal" boot or equal. Manhole sleeves, gaskets and sealants shall be furnished complete with lubricants, stainless steel stops, inserts, clamps, etc., and pipe installation shall conform to manufacturer's recommendations. When openings are made in the field, the openings for entering pipes shall be of a size to provide a uniform annular space between

the outside of pipe wall and the opening in the manhole section of 3/4 inch, and after the pipe is in position the annular space shall be solidly filled with non shrink mortar. Care shall be taken to assure that the openings are made to permit setting of the entering pipe at its correct elevation as indicated or directed. Openings which are cut in the manhole sections in the field shall be carefully made so as not to damage the sections; damaged sections will be rejected and shall be replaced at no additional expense to the Owner. Manhole sections shall be installed so that the manhole steps shall be in alignment. Brick masonry shall be provided for adjusting manhole frames and covers to grade. Exterior surfaces of brick masonry shall be plastered with 1/2 inch of cement mortar. Manhole inverts shall be brick masonry or concrete and shall have a cross-section shaped to conform to connecting pipes; changes in size shall be made gradually and evenly.

- B. Where shown, existing manholes shall be abandoned and filled. The brick and/or concrete masonry shall be removed 3 feet below the finished street or ground surface, and the base broken so that water cannot collect in the abandoned structure. Pipes extending from the structures shall be plugged with brick masonry or concrete, and manholes shall be backfilled with suitable granular material, compacted in accordance with Section 02222 – Earthwork, to the densities required, except that compaction in 6-inch lifts may be ordered by the Engineer if it deems additional compaction is necessary.

3.4 TAP CONNECTIONS

- A. Make connections to existing underground drainage structures in accordance with the detail in the Contract Drawings.
- B. Take care while making tap connections to prevent concrete or debris from entering existing piping or structure. Remove debris, concrete, or other extraneous material that may accumulate.

3.5 BACKFILLING

- A. General: Conduct backfill operations of open cut trenches closely following laying, jointing, and bedding of pipe, and after initial inspection and testing are completed, all in accordance with Section 02222 – Earthwork.

3.6 LEAKAGE TESTS

- A. As approved by the Engineer, the Contractor may perform the leakage tests using an approved low air pressure testing system. This type of test may be used only immediately after assembly of the manhole and only prior to backfilling. The manhole to pipe connection should only be a flexible connector. All lift holes shall be plugged with a non-shrinking mortar. For this test, each manhole shall be tested under 10-inch Hg vacuum. The test shall pass if the vacuum remains at 10-inch Hg or drops no lower than 9-inch Hg after 60 seconds for 4 or 5 foot manholes from 0 to 10 feet deep, 75 seconds for 4 or 5 foot manholes from 10 to 15 feet deep, or 90 seconds for 4 or 5 foot manholes from 15 to 25 feet deep. A volume equivalent shall be calculated for larger diameter manholes to determine the testing length based on these parameters.

END OF SECTION 02252

SECTION 02435

REMOVING AND RELAYING EXISTING DRAINS

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 RELATED WORK

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

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 DRAIN PIPE REMOVAL

- A. A trench of sufficient width and depth shall be excavated so that the pipes may be removed without damage.
 - 1. The Contractor shall stockpile all removed sections of pipe at or near the job site.
 - 2. They shall be properly stacked or dispersed and protected to prevent damage.

3. The Contractor shall replace any pipe sections that are to be relaid which may become lost, damaged or destroyed as a result of his operations, or because of his failure to properly store and protect them in a manner that would eliminate such damage or loss.
4. Sections already damaged through no fault of the Contractor shall be replaced at the Owner's expense.

3.2 RELAYING DRAIN PIPES

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

END OF SECTION

SECTION 02510

PAVEMENT

PART 1 GENERAL

1.1 DESCRIPTION

- A. Provide asphaltic pavement and appurtenant items as required by the Contract Documents.

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

1.2 RELATED WORK

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

- 1. Section 02222, Earthwork

1.3 STANDARDS

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

1.4 SUBMITTALS

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

PART 2 PRODUCTS

2.1 GRAVEL SUBBASE

- A. Shall be as specified in Section 02222, Earthwork.

2.2 ASPHALTIC PAVEMENT

- A. Shall conform to Table 450.10.1: HMA Pavement Courses & Mixture Types of the Standard Specifications.
 - 1. The Binder / Intermediate Course shall be SUPERPAVE Intermediate Course – 12.5.
 - 2. The Top / Surface Course shall be SUPERPAVE Surface Course -9.5.

2.3 ASPHALT EMULSION FOR TACK COAT

- A. Anionic emulsion used for tack coat shall be grade RS-1h per the Standard Specifications.
- B. A tack coat of asphalt emulsion shall meet the requirements of the Standard Specifications 450.30.

2.4 PAVEMENT MARKING PAINT

- A. Shall be High Heat Rapid Drying Traffic Marking Material conforming to Section M7.01.09 and Section M7.01.8 (Yellow and White High Heat Rapid Drying Traffic Marking Material) of the Standard Specifications.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

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

3.2 FINAL PREPARATION OF SUBGRADES

- A. Gravel Subbase:
 - 1. Minimum compacted depth shall be as shown on details, 12 inches as measured from the bottom of the pavement.

2. All layers shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by the standard AASHTO Test Designation T99 Compaction Test Method C at optimum moisture content.

3.3 GENERAL

- A. All asphaltic pavement thickness referred to in this Section shall be compacted thickness.
- B. Locations with works installed in Spring/Summer 2024 shall have permanent pavement installed in Spring of 2025.
- C. No asphaltic pavement shall be placed when the air temperature is below forty (40) degrees Fahrenheit, or when the material on which the mix is to be placed contains frost.
- D. Maintain asphaltic concrete under this Contract during the guarantee period of one (1) year for town roads and driveways.

3.4 PLACEMENT OF ASPHALTIC CONCRETE PAVEMENT

- A. Town Roads and Driveways
 1. Temporary Pavement
 - a. Place after underground facilities have been installed, weekly or as directed by the Owner.
 - b. Pavement shall be the type as specified in this Section except that “cold-mix” will be acceptable for repairs during seasonal closure of the asphalt concrete supplier.
 - c. Temporary pavement shall be 2-inches thick, placed in a single lift.
 - d. Placed with self-propelled spreader.
 - e. Compaction shall be accomplished with a self-propelled roller, with a weight of approximately 285 pounds per inch of roller width.
 - f. Temporary pavement shall be maintained by the Contractor until the permanent pavement is placed.

2. Base Course:
 - a. After a winter settling period, mill down temporary pavement.
 - b. Pavement compacted thickness shall be two and one half (2-1/2) inches, placed in a single lift.
 - c. Placed with a self-propelled spreader.
 - d. Compaction shall be accomplished with a self-propelled roller, with a weight of approximately 285 pounds per inch of roller width.
 - e. Base course pavement shall be maintained by the Contractor until permanent top course pavement is placed.
3. Trench Top Course Resurfacing:
 - a. Base course pavement shall remain in place.
 - b. The base course shall be swept clean of all foreign matter and loose material.
 - c. Depressions in the base course resurfacing shall have a leveling course applied before the top course paving begins.
 - d. The surface receiving the top course shall be completely dry prior to the application of the tack coat.
 - e. Tack coat shall be applied at the rate of 0.25 gallons per square yard. The contact surface of the curbing, castings and other structures shall be painted with the tack coat.
 - f. All castings (frames and covers, valve boxes), shall be raised to finish grade before the top course is applied.
 - g. The equipment used for spreading and finishing shall be a mechanical self-powered paver capable of spreading and finishing the mixture true to line, grade, width and crown by means of fully automated controls for both longitudinal and transverse slope.
 - h. Top course pavement compacted thickness shall be one and one half (1½) inches, placed in a single lift.
 - i. Compaction shall be accomplished with a self-propelled roller with a weight of approximately 285 pounds per inch of roller width.

3.5 CASTING ADJUSTMENTS

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

3.6 BERMS

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

3.7 DUST CONTROL TREATMENT

- A. Calcium chloride shall be applied only upon direction of the Engineer.
 - 1. The roadway shall be swept clean and calcium chloride spread at a uniform rate over the prepared gravel trench surface.

3.8 PAVEMENT MARKINGS

- A. Pavement markings shall be applied as shown on the contract drawings or at locations directed by the Engineer.
 - 1. Pavements shall have been in place 48 hours prior to the application.
 - 2. The surface shall be prepared to accept the application in compliance with the paint manufacturer's requirements.

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

END OF SECTION

SECTION 02514

CEMENT CONCRETE SIDEWALK

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work included: The work of this Section shall consist of furnishing all labor, materials and equipment required for installing sidewalks to conform to lines and grades shown on the Drawings.
- B. Additional Work: The work in this Section shall consist of furnishing and installing all labor, materials and equipment required for install either driveway or sidewalk transitions adjacent to or abutting the proposed concrete sidewalks. In general, the Contractor shall match the material types and adjust cement for any changes in grade.

1.2 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02222, Earthwork
 - 2. Section 02515, Granite Curbs
 - 3. Section 02516, Remove and Reset Existing Curb
 - 4. Section 03300, Cast-In-Place Concrete

PART 2 PRODUCTS

2.1 CEMENT CONCRETE SIDEWALKS

- A. Cement concrete for sidewalks shall conform to Class A cement concrete (3500 psi) as specified in Section 03300.
- B. Curb ramps and driveway transitions shall conform to Class A concrete (3500 psi) as specified in Section 03300.

2.2 GRAVEL SUBBASE

- A. Gravel subbase shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials.

CEMENT CONCRETE SIDEWALK

- B. Gradation requirements for gravel subbase shall be as specified in Section 02222, Earthwork for structural fill.

PART 3 EXECUTION

3.1 CEMENT CONCRETE SIDEWALKS

- A. The subgrade for the sidewalks shall be shaped parallel to the proposed surface of the walks and shall be thoroughly compacted.
- B. After the subgrade has been prepared, a foundation of gravel shall be placed upon it. After being compacted thoroughly, the foundation shall be at least 8 inches in thickness and parallel to the proposed surface of the walk. The gravel shall be compacted to a not less than 95% of maximum density as defined in Section 02222, Earthwork.
- C. Side forms and transverse forms for sidewalks shall be smooth, free from warp, of sufficient strength to resist springing out of shape, of a depth to conform to the thickness of the proposed walk.
- D. The edge shall conform to the grade of the finished walk and shall have sufficient pitch to provide for surface drainage and shall not exceed 1/4 of an inch per foot.
- E. The cement concrete sidewalks shall be placed in alternate slabs 24 feet in length except as otherwise ordered. The slabs for sidewalks shall be separated by transverse preformed expansion joint fillers 3/8 inch in thickness. Sidewalk and driveway expansion joints shall be 3/8" x 4" preformed ethylene vinyl acetate or closed cell polyethylene foam material.
- F. Preformed expansion joint filler shall be placed adjacent to or around existing structures as directed.
- G. The cement concrete shall be placed in such quantity that after being thoroughly consolidated in place it shall be 4 inches in depth. At driveways, the sidewalks shall be 6 inches in depth. After edging and jointing operations, the surface shall be floated with an aluminum or magnesium float. Immediately following floating, the surface shall be steel-troweled. If necessary, tooled joints and edges shall be rerun before and after troweling to maintain uniformity. After troweling, the surface shall be brushed by drawing a soft bristled push broom with a long handle over the surface of the cement concrete to produce a non-slip surface.
- H. The surface of all cement concrete sidewalks shall be uniformly scored into block units of areas not more than 24 square feet. The depth of the scoring shall be at least one quarter of the thickness of the sidewalk.
- I. The application of neat cement to surfaces in order to hasten hardening is prohibited.

- J. The finishing of concrete surface shall be done by experienced and competent cement finishers. When completed the walks shall be kept moist and protected from traffic and weather for at least 3 days.
- K. At driveways or street intersections the cement concrete shall be blended or tapered to cap the end of either concrete or granite curbing to form a smooth transition.
- L. Reinforcing steel shall be installed in accordance with Section 03300, Cast-In-Place Concrete.

3.2 CURB RAMPS AND DRIVEWAYS

- A. The subgrade for the sidewalks shall be shaped parallel to the proposed surface of the walks and shall be thoroughly compacted.
- B. After the subgrade has been prepared, a foundation of gravel shall be placed upon it. After being compacted thoroughly, the foundation shall be at least 8 inches in thickness and parallel to the proposed surface of the walk.
- C. Side forms and transverse forms for sidewalks shall be smooth, free from warp, of sufficient strength to resist springing out of shape, of a depth to conform to the thickness of the proposed walk.
- D. The edge shall conform to the grade of the finished walk and shall have sufficient pitch to provide for surface drainage and shall not exceed 1/4 of an inch per foot.
- E. The concrete ramps and driveway transitions shall be placed in alternate slabs 24 feet in length except as otherwise ordered. The slabs for sidewalks shall be separated by transverse preformed expansion joint fillers 3/8 inch in thickness. Ramps and driveway expansion joints shall be 3/8" x 4" preformed ethylene vinyl acetate or closed cell polyethylene foam material.
- F. Handicap ramps and curb ramps at intersections shall be constructed in accordance with the Americans with Disabilities Act (ADA) Accessibility Guidelines (Jan 1998 edition) and in accordance with dimensions and minimum slopes presented in the design drawing(s) details.
- G. Preformed expansion joint filler shall be placed adjacent to or around existing structures as directed.
- H. The cement concrete in driveways shall be placed in such quantity that after being thoroughly consolidated in place it shall be 6 inches in depth. The cement concrete in sidewalk or curb ramps shall be 4 inches in depth except in conjunction with driveway areas. After edging and jointing operations, the surface shall be floated with an aluminum or magnesium float. Immediately following floating, the surface shall be steel-troweled. If necessary, tooled joints and edges shall be rerun before and after troweling to maintain uniformity. After troweling, the surface shall be brushed by drawing a soft bristled push broom with a long handle over the surface of the cement concrete

to produce a non-slip surface.

- I. At driveways, street intersections or sidewalk ramps the concrete shall be blended or tapered to cap the end of either concrete or granite curbing to form a smooth transition.
- J. Reinforcing steel shall be installed in accordance with Section 03300, Cast-In-Place Concrete.

3.3 REMOVAL OF EXISTING SIDEWALKS

- A. The Contractor shall remove and reset all existing castings in the sidewalk layout. If the existing castings are damaged as part of the Contractors sidewalk removal operations, the casting shall be replaced at the Contractor's expense. The work shall include any coordination required with public or privately owned utilities with equipment set in the sidewalk layout.
- B. The Contractor shall make every effort to minimize damage to existing tree and root systems. In the case of excessive damage, which if determined by the Owner will result in the death of the tree, the Contractor will be held fully responsible for replacement of the trees at no additional expense to the Owner.

3.4 TRANSITIONS TO WALKWAYS AND DRIVEWAYS

- A. The Contractor shall furnish and install a transition to the existing sidewalks and driveways to match the existing grades. The transition can vary from 6 inches to 3.0 feet wide depending on the location. The transition shall meet the Americans with Disabilities Act (ADA) requirements as specified herein under Item 3.02(F). The Contractor shall match the existing walk or driveway material type (i.e. cement concrete or asphaltic pavement). Any damage to the existing sidewalks or driveways, as a direct result of the Contractor's operations, shall be restored by the Contractor to the original conditions at no additional expense to the Owner.
- B. All costs related to furnishing and installing the transitions shall not be measured for separate payment. The costs shall be incorporated into the cost per square yard of the new sidewalks delineated on the contract drawings.

END OF SECTION

SECTION 02515

GRANITE CURBS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work included: The work of this Section shall consist of furnishing all labor, materials and equipment required for installing and setting curb(s), curb corners and edging on a gravel foundation, to conform with lines and grades shown on the Drawings.

1.2 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02222, Earthwork
 - 2. Section 02514, Cement Concrete Sidewalks
 - 3. Section 03300, Cast-In-Place Concrete

PART 2 PRODUCTS

2.1 GRANITE CURBING

- A. Granite curbing shall type VA-4 conforming to the requirements specified in Subsection M9.04.1 of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges.
- B. All granite curb and edging shall be light gray in color, free from seams and other structural imperfections or flaws which would impair its structural integrity, and of a smooth splitting appearance.
- C. Whenever curbing is sawed, all surfaces that are to be exposed shall be thoroughly cleaned and any iron rust or iron particles removed by sand blasting or other approved method and any saw mark in excess of 1/8 inch shall be removed.

2.2 CURB CORNERS (Bullnose Corners)

- A. The granite for curb corners shall conform to M9.04.0 and shall have horizontal Beds. The curbs shall match the adjacent curbing in size, color and quality. The front arris lines shall extend through $\frac{1}{4}$ of a circle having a radius of 2 feet Type A curb corners. The back arris line shall be straight. The plane of back shall be normal to top.

2.3 GRANITE CURB INLETS (Throat Stone)

- A. The granite curb inlets shall conform to MassDOT Standards. The curb inlets shall be horizontal bed with tops free from wind.
- B. The curbing shall be sawn or peen hammered on top and the front face shall be straight split, free from drill holes.
- C. The inlet curb shall be six (6) feet in length and 16-19 inches in depth. The curb shall be six (6) inches wide at the top and at least six inches wide at the bottom.
- D. The mouth of the curb inlet shall be at least three (3) inches in depth and at least two (2) feet in length. The inlet curb shall be cut in the front face of the stone and the inlets shall match the adjacent curbing in color.

2.4 GRAVEL

- A. Gravel shall conform to the requirements of Subsection M1.03.0 Type C of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges (Standard Specifications).

PART 3 EXECUTION

3.1 EXCAVATING TRENCH AND PREPARING FOUNDATION

- A. The trench for the curb shall be excavated to a width of 18-inches. The subgrade of the trench shall be a depth below the proposed finished grade of the curb equal to 6 inches plus the depth of the curbstone. The trench for the curb corner shall extend 6 inches beyond the front and back of curb corner to the full depth of foundation.
- B. The foundation for the curb shall consist of gravel spread upon the subgrade and after being thoroughly compacted by tamping shall be 6 inches in depth.

3.2 SETTING CURB AND EDGING

- A. All spaces under the curb, curb corners or edging shall be filled with gravel thoroughly compacted so that the curb, curb corners or edging will be completely supported throughout their length.

3.3 FILLING ABOUT TRENCH

- A. After the curb, curb corners, curb inlets and edging is set, the space between it and the wall of the trench shall be filled with gravel thoroughly tamped to the depth directed, care being taken not to affect the line or grade of the curb, curb corners, curb inlets and edging.

3.4 POINTING

- A. The joints between curbstones or edging shall be carefully filled with cement mortar and neatly pointed on the top and front exposed portions. After pointing, the curbstones or edging shall be satisfactorily cleaned of all excess mortar that may have been forced out of the joints.

3.5 TRANSITION CURB FOR WHEELCHAIR RAMPS

- A. Transitions from normal curb settings to wheelchair ramps shall be accomplished with transition curb as shown on the Drawings. Transitions shall be of the same type of curb and similar to that abutting and, if on a curve, of the same radius.

END OF SECTION

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SECTION 02516

REMOVE AND RESET EXISTING CURBS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work included: The work of this Section shall consist of removing the existing curb(s), edging, curb corners and curb inlets of every type and cross section and resetting them in accordance with these specifications and in conformity with the lines and grades shown on the Drawings.

1.2 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 02222, Earthwork
 - 2. Section 02510, Pavement
 - 3. Section 02514, Cement Concrete Sidewalks
 - 4. Section 03300, Cast-In-Place Concrete

PART 2 MATERIALS

2.1 CURBING

- A. Curb, edging, curb inlets and curb corners shall consist of the same as is designated to be reset.

2.2 GRAVEL

- A. Gravel shall conform to the requirements of Subsection M1.03.0 Type C of the MassDOT Standard Specifications for Highways and Bridges (Standard Specifications).

PART 3 EXECUTION

3.1 REMOVAL OF EXISTING CURB

- A. A trench of sufficient width or depth shall be excavated so that the existing curb, edging, curb corners and curb inlets can be removed without damage.

REMOVE AND RESET EXISTING CURBS

- B. The Contractor shall protect all curb or edging and keep it in satisfactory condition until the acceptance of the entire contract. The Contractor shall replace any existing curb, edging, curb corners and curb inlets that is to be reset, which is lost or damaged as a result of his operations, or because of his failure to store and protect it in a manner that would eliminate its loss or damage.
- C. The length of any section of curb or edging, shall be altered by cutting in order to fit closures as necessary. The ends of all stones shall be square with the planes of the top and face so that when the stones are placed end-to-end as closely as possible no space shall show in the joint at the top and face of more than $\frac{3}{4}$ -inch for the full width of the top and for 8-inches down on the face.
- D. The Contractor shall accept and hold entire responsibility for the removal, handling, stacking at a convenient location for the Owner and the Contractor, and protection of all curbing and corners until final removal from the site or the resetting of the curb. Any curbing damaged through lack of protection or carelessness by the Contractor shall be replaced at the Contractor's expense.
- E. Any curb or curb corners not damaged through lack of protection or carelessness by the Contractor but deemed by the Engineer as unsatisfactory for relaying or stacking will be discarded. The Contractor is responsible for proper disposal of the granite without additional compensation. The Owner reserves the right to claim the portions of the damaged granite deemed useful.

3.2 EXCAVATING TRENCH AND PREPARING FOUNDATION

- A. The trench for the curb shall be excavated to a width of 18-inches. The subgrade of the trench shall be a depth below the proposed finished grade of the curb equal to 6-inches plus the depth of the curbstone. The trench for the curb corner shall extend 6-inches beyond the front and back of curb corner to the full depth of foundation.
- B. The foundation for the curb shall consist of gravel spread upon the subgrade and after being thoroughly compacted by tamping shall be 6-inches in depth.

3.3 SETTING CURB AND EDGING

- A. All spaces under the curb, curb corners or edging shall be filled with gravel thoroughly compacted so that the curb, curb corners or edging will be completely supported throughout their length.

3.4 FILLING ABOUT TRENCH

- A. After the curb, curb corners, curb inlets and edging is set, the space between it and the wall of the trench shall be filled with gravel thoroughly tamped to the depth directed, care being taken not to affect the line or grade of the curb, curb corners, curb inlets and edging.

REMOVE AND RESET EXISTING CURBS

3.5 POINTING

- A. The joints between curbstones or edging shall be carefully filled with cement mortar and neatly pointed on the top and front exposed portions. After pointing, the curbstones or edging shall be satisfactorily cleaned of all excess mortar that may have been forced out of the joints.

3.6 TRANSITION CURB FOR WHEELCHAIR RAMPS

- A. Transitions from normal curb settings to wheelchair ramps or driveways shall be accomplished with transition curb. Transitions shall be of the same type of curb and similar to that abutting and, if on a curve, of the same radius.

END OF SECTION

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SECTION 02604

CATCH BASINS

PART 1 - GENERAL

1.1 SUMMARY

- A. The work covered under this Section includes the furnishing of all plant, labor, equipment, appliances and materials, and performing all operations in connection with installing catch basins at the locations and to the details indicating and/or directed, including pre-cast concrete sections, base, catch basin hood, frame and grate, and inserts/traps.

1.2 RELATED WORK

- A. DIVISION 1 – GENERAL REQUIREMENTS
- B. Section 02222 – EARTHWORK
- C. Section 02252 – PRECAST CONCRETE MANHOLES

1.3 SUBMITTALS

- A. General: Submit the following in accordance with General Conditions of Contract and Section 01300 – SUBMITTALS:
 - 1. The Contractor shall furnish complete shop drawings for all pre-cast sections; cast iron frames, grates, inserts/traps, and hoods; and other appurtenances. Cast iron frames, grates, inserts/traps, and hoods shall be from a United States manufacturer.
 - 2. Prior to fabrication, submit shop drawings showing details of precast monolithic base sections, risers, flat slab manhole tops, joints and gaskets, construction details, tolerances, and other information as required by the Owner.
 - 3. Submit manufacturer's recommended installation procedures for informational purposes.

PART 2 - PRODUCTS

2.1 CATCH BASINS (SINGLE AND DOUBLE GRATES)

- A. Precast concrete catch basins shall be constructed as detailed, and shall be a minimum of 4-feet in diameter for single grate catchbasins and 5-feet diameter for double grate catchbasins. Catch basins shall be designed for a minimum of H-20 loading. Catch basins shall have a minimum of 4-foot sump depth and conform to ASTM C478-72 unless otherwise noted on plans.
- B. Pre-cast concrete catch basins shall conform to the applicable requirements of Section 02252 - Precast Manholes. Pre-cast concrete single catch basin top slabs shall be a minimum thickness of 8-inches. Wall section shall be a minimum 5-inches thick and the

CATCH BASINS

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base section shall be a minimum 6-inches thick. Pre-cast concrete double catch basin top slabs shall be a minimum thickness of 8-inches.

2.2 FRAMES

- A. Frames to have factory applied coating to prevent corrosion
- B. Single Catch Basin Frames shall be 24-inch square x 8-inch as manufactured by EJ, Neenah Foundry Co., Campbell Foundry Co., or equal.
- C. Double Catch Basin Frames shall be 24-inch x 48-inch x 8-inch as manufactured by EJ with appropriate flange removed to match drawings, Neenah Foundry Co., Campbell Foundry Co., or equal.
- D. Frames shall be manufactured by a United States manufacturer who can demonstrate at least five years of successful experience.

2.3 GRATES

- A. Grates to have factory applied coating to prevent corrosion
- B. Single Catch Basin Grates shall have 2-inch square openings, as manufactured by EJ, Neenah Foundry Co., Campbell Foundry Co., or equal unless otherwise shown on the drawings.
- C. Double Catch Basin Grates shall have 2-inch square openings, as manufactured by EJ, Neenah Foundry Co., Campbell Foundry Co., or equal unless otherwise shown on the drawings.
- D. Grates shall be manufactured by a United States manufacturer who can demonstrate at least five years of successful experience.

2.4 HOODS

- A. Catch Basin Hoods shall be as manufactured by EJ, model L-202, Neenah Foundry Co., Campbell Foundry Co., or equal.

2.5 INSERTS

- A. Catch basin traps shall be installed in all catch basins in paved areas. Traps shall be cast iron and removable. Traps shall be Neenah Type R-3701, or equal.

PART 3 - EXECUTION

3.1 SETTING PRECAST CATCH BASIN SECTIONS

- A. Catch basins shall be constructed with a pre-cast concrete base placed on a firm compacted subbase as specified and as detailed on the Drawings. Catch basins shall be installed level and plumb, with specified joint sealant and in accordance with the provisions of Section 02252 – Precast Manholes.
- B. Care shall be taken to assure that the openings are made to permit setting of the entering pipe at its correct elevation as indicated or directed.
- C. All holes in sections used for handling shall be thoroughly plugged with non-shrink grout.
- D. Cutting or tampering of cast basin structures in the field, for the purpose of creating new openings or modifying existing openings, will not be permitted.

3.2 LAYING BRICKWORK

- A. Only clean bricks shall be used in brickwork for manholes. The brick shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

3.3 SETTING CATCH BASIN FRAMES AND GRATES

- A. Catch Basin frames shall be set with tops conforming accurately to the grade of the pavement or finished ground surface or as indicated on the Drawings. Frames shall be set concentric with the top of the manhole and in a full bed of mortar so that the space between the top of the brick and mortar and the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the concrete shall be placed all around the bottom flange. The mortar shall be smoothly finished to a height of 4-inches above the flange.
- B. Grates shall be left in place in the frame on completion of other work at the manholes.

3.4 INSTALLING HOODS

- A. Hoods shall be built into the catch basin wall and shall be watertight.

3.5 CLEANING

- A. All excess material including dirt, loose concrete, bricks, grit, stones and any other material, shall be removed from all manholes prior to final review by the Engineer.
- B. A final cleaning shall be performed, to include complete removal of all accumulated debris and fluids from each catch basin, upon complete project completion.

END OF SECTION 02604

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SECTION 02611

DUCTILE IRON PIPE AND FITTINGS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included: Provide buried ductile iron water mains, fittings, and other appurtenances as required by the Contract Documents.
- B. For joints in buried exterior pipelines, provide push-on joints. All fittings and valves shall be mechanical joint.

1.2 RELATED WORK

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

1.3 QUALITY ASSURANCE

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

DUCTILE IRON PIPE AND FITTINGS

- D. All pipe materials and lubricants in contact with water shall be NSF approved for use with potable water.

1.4 INSPECTION, TESTS AND ACCEPTANCE

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

1.5 STANDARDS

- A. The following American Water Works Association (AWWA) standards form a part of this specification as referenced:
 - 1. AWWA C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
 - 2. AWWA C110 Ductile-Iron and Gray-Iron Fittings, 3 In. through 48 In. for Water and Other Liquids.
 - 3. AWWA C111 Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
 - 4. AWWA C150 Thickness Design of Ductile-Iron Pipe.
 - 5. AWWA C151 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand- Lined Molds, for Water and Other Liquids.
 - 6. AWWA C153 Ductile-Iron Compact Fittings, 3 In. through 12 In., for Water and Other Liquids.
 - 7. AWWA C600 Installation of Ductile Iron Watermain and Their Appurtenances.

1.6 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300, Submittals.
- B. Materials list of items proposed to be provided under this Section.

- C. Shop Drawings: Submit the following in accordance with Section 01300 – Submittal Procedures
1. Submit shop drawings or descriptive literature, or both, showing dimensions, join and other detail for each type and class of pipe, fitting and restraint system to be furnished for the project. All materials furnished under the Contract shall be manufactured only in accordance with the Specifications. Submittals shall include material information, dimensions, pipe class information, weights, coating and lining system data.
 2. Submit manufacturer's literature stating that the ductile iron pipe and fittings have been manufactured and tested in accordance with AWWA/ANSI specifications.
 3. Submit information on country of manufacturer for various items as specified.
- D. Submit a detailed description of proposed testing, flushing and disinfection procedures to be used for this project. The description shall contain the name of the person responsible for the testing, flushing and disinfection work, equipment to be used, chemical to be used, method of measuring flow during flushing procedures and the name of the laboratory to be used for analysis. Review of the description shall not be construed as approval of any methods to be used. The Contractor shall be fully responsible for achieving the specified test results.
- E. Material list of items proposed, and manufacturer's specifications and other data needed to prove compliance with the specified requirements shall be provided within 30 calendar days after the Contractor has received the Owner's Notice to Proceed.

PART 2 PRODUCTS

2.1 DUCTILE IRON PIPE

- A. Ductile iron pipe shall be that of a United States manufacturer who can demonstrate at least 5 years of successful experience in manufacturing ductile iron pipe. The pipe shall be equipped with push-on type, restrained joints, or mechanical joints, as required.

- B. All pipe shall meet the requirements of ANSI/AWWA C151/A21.51.
1. The ductile iron pipe shall be Class 52 for water main, and furnished in minimum nominal 18-foot lengths, with push-on or mechanical joints as manufactured by U.S. Pipe and Foundry Company, Griffin Pipe Co., Clow Corporation, or equal with gaskets conforming to ANSI/AWWA C111/A21.11 "Rubber Gasket Joints".
 2. Joints:
 - a. Mechanical meeting the requirements of ANSI/AWWA C111/A21.11.
 - b. Push-on meeting the requirements of ANSI/AWWA C111/A21.11.
 3. Elastomeric gaskets for ductile iron pipe and fittings shall meet the requirements of ASTM D3139 and shall be capable of withstanding a pH of 9.5, and shall be petroleum resistant. The elastomeric gasket shall provide a tight seal that protects the line from shock and vibration and compensates for expansion and contraction of pipe lengths. The elastomeric gasket shall not support the growth of bacteria.
 4. The ductile iron pipe shall be double cement lined inside and then asphalt seal coated on the outside and inside approximately 1 mil. Thick. The cement lining shall conform to AWWA C104 ANSI A21.4. The pipe shall be furnished along with necessary materials and equipment recommended by the manufacturer for use in joining pipe lengths and fittings.
 5. Accessories: Pipe shall be provided with all necessary accessories to make-up the joint (glands, tee head bolts, hex nuts, etc.). A minimum of three brass wedges shall be supplied for every joint.

2.2 FITTINGS

- A. Fittings shall be manufactured in the United States and shall be compact ductile iron Class 350 Mechanical Joint, conforming to ANSI Specification A21.53 (AWWA C153), latest edition, for pipe sizes 16-inches and smaller, unless specifically stated. Fittings shall be suitable for use with restraints as specified hereinafter.
1. Pressure rating: 350 psi.
 2. Lining and coating: Same as pipe. Suitable for potable water and NSF 61 certified.
 3. Joint: Mechanical joint in compliance with ANSI/AWWA C111/A21.11.

DUCTILE IRON PIPE AND FITTINGS

4. All fittings shall be marked with weight and shall have cast upon them the pressure rating, the manufacturer's identification, nominal diameter of openings and the number of degrees or fraction of the circle of all bends. Markings on fittings: Comply with ANSI/AWWA C110/A21.10.

2.3 SPECIAL FITTINGS

- A. Hydrant tees shall have a rotatable mechanical joint gland on the 6-inch plan end brand to provide positive valve restraint, unless otherwise allowed by the Engineer. Gate valve shall be secured directly to the tee by using the standard mechanical joint gasket and standard bolts.
- B. Retainer Glands: See Section 02650 – Thrust Blocks and Joint Restraints.
- C. Couplings: Shall be cast or ductile iron, consisting of a middle ring, two (2) rubber gaskets, and the followers with stainless steel bolts and nuts. Coupling and gasket shall be sized for the particular application intended. The couplings shall be provided with gaskets of a composition suitable for exposure to liquid within the pipe. The gaskets shall have metallic tips to provide electrical continuity through the joint. Couplings shall be as manufactured by Rockwell.
- D. Plugs: Shall be ductile iron with mechanical or push-on joint and retainer feature.
- E. Sleeves: Shall be ductile iron with mechanical joint, long body style meeting or exceeding the requirements of ANSI/AWWA C110/A21.10 or latest revision thereto.
- F. Caps and plugs installed in all new work as indicated on the drawings shall be provided with a threaded corporation or bleeder valve so that air and water pressure can be relieved to future connection.
- G. Transition Couplings: As required for connecting to existing pipe and for joining pipe of different diameters shall be furnished as required and designed for compatibility with the pipe and operating pressures encountered.
- H. Transition couplings shall be ductile iron, macro body transition, ductile iron coupling with extended range style with SBR gaskets and fusion bonded epoxy coating. Coupling shall be XR501 manufactured by Romac or approved equal. Couplings shall be manufactured in the United States.

2.4 OTHER MATERIALS

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

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

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

3.2 FIELD MEASUREMENTS

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

3.3 EARTHWORK

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

3.4 PIPE HANDLING

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

3.5 INSTALLATION

- A. Pipe:
 - 1. Installation and jointing of ductile iron pipe shall be in accordance with AWWA C600 Sections 9b and 9c, latest revision, as applicable.
 - 2. In general, jointing of ductile iron push-on pipe and fittings shall be done as follows.

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

E. Caps and Plugs:

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

F. Thrust Blocking for Fittings:

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

G. Couplings:

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

3.6 SPECIAL CONDITIONS

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

3.7 TESTING

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

3.8 DISINFECTING

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

END OF SECTION

SECTION 02620

HIGH DENSITY POLYETHYLENE 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

- B. 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 pipes.
- C. Related sections include the following:
 - 1. Section 02222 - Earthwork
 - 2. SUBMITTALS
 - i. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:
- D. 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.

PART 2 - PRODUCTS

2.1 PIPE RAW MATERIAL REQUIREMENTS

- A. The pipe shall be qualified to meet the following:
 - 1. The pipe shall be made from a polyethylene resin compound with a minimum cell classification of 345464C as defined in ASTM D3350.
 - 2. The pipe shall be made from materials meeting the designation of PE3408 as assigned by the Plastics Pipe Institute.
 - 3. The polyethylene raw material shall contain a minimum of 2%, well dispersed finely

HIGH DENSITY POLYETHYLENE PIPE

divided carbon black for UV stabilization. Additives which can be conclusively proven not to be detrimental to the pipe may also be used provided that the pipe produced meets or exceeds all of the requirements of this specification.

4. The pipe shall contain no recycled compound except that generated in the manufacturers' own plant, known as re-grind.
5. The pipe manufacturers' Quality System shall be certified as meeting the requirements of an ISO 9001:2000 Quality management system, by a qualified independent body.
6. Written certification to indicate compliance with the requirements of Section 2.1 of this specification shall be provided by the pipe supplier.
7. The pipe material shall be resistant to corrosion resulting from the presence of Hydrogen Sulfide and pH values between 2 and 13.

2.2 PIPE MANUFACTURING REQUIREMENTS

A. Pipe Requirements

1. The pipe (per ASTM F2648) shall have a smooth interior and annular exterior corrugations.
2. (4 to 60)-inch/ (100 to 1500 mm) shall meet ASTM F2648
3. Manning's "n" value for use in design shall be 0.012.
4. Pipe shall be ADS N-12 WT IB Pipe or approved equal.

B. Joint Performance

1. (4 to 60)-inch/(100 to 1500 mm) pipe shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.
2. (12 to 60)-inch /(300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

C. Fittings

1. Fittings shall conform to ASTM F2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the watertight joint performance requirements of ASTM F2306.

D. Field Pipe and Joint Performance

1. To ensure watertightness, field performance verification may be accomplished by

HIGH DENSITY POLYETHYLENE PIPE

testing in accordance with ASTM F2487. Appropriate safety precautions must be used when field testing any pipe material. Contact the manufacturer for recommended leakage rates.

E. Material Properties

1. Material for pipe production shall be an engineered compound of virgin and recycled high-density polyethylene conforming with the minimum requirements of cell classification 424420C, (ESCR Test Condition B) for 4- through 10-inch (100 to 250 mm) diameters, and 435420C, (ESCR Test Condition B) for 12-inch through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The design engineer shall verify compatibility with overall system including structural, hydraulic, material and installation requirements for a given application.

F. Installation

1. Installation shall be in accordance with ASTM D2321 and Manufacturer published installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot (0.3 m), and for 60-inch (1500 mm) diameters, the minimum cover shall be two feet (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; refer to manufacture's guidelines.

G. Pipe Dimensions

1. Nominal Diameter

Pipe I.D.	4	6	8	10	12	15	18	24	30	36	42	48	60
Pipe O.D.	4.8	6.9	9.1	11.4	14.5	18	22	28	36	42	48	54	67

PART 3 - EXECUTION

3.3 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.

3.4 TESTING

- A. Testing gravity drain joints via water infiltration or exfiltration is a common practice. For HDPE, this testing should be conducted in accordance with ASTM F2487 Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Corrugated High

HIGH DENSITY POLYETHYLENE PIPE

Density Polyethylene Pipelines. These standards entail first observing the ground water conditions and, if applicable, measuring the infiltration rate of the ground water through the joints. If ground water is not applicable, then the line is filled with water and the leakage is observed through exfiltration. Manholes shall be tested separately and independently of the pipe line to the requirements established in the project specifications. When water level is measured in the manhole for the exfiltration test, the leakage associated with the manhole shall be subtracted from the overall leakage of the test section to establish a pass or fail grade for the pipe.

3.5 TEST FAILURE

- A. If the section of pipe fails to pass the leakage test, or if there is any visible leakage, the Contractor shall locate, uncover and repair or replace the defective pipe fitting or joint and retest all at his own expense. Pipe will be considered passing only when the leakage does not exceed the above standard. Passing the test does not absolve the Contractor of his responsibility if leaks develop later within the period of warranty.

3.6 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 01700.

END OF SECTION 02620

SECTION 02640

WATER MAIN VALVES AND APPURTENANCES

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 RELATED WORK

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

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Shop Drawings: Submit the following within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Submit shop drawings showing valve box dimensions, materials and country of manufacturer.

1.4 STANDARDS

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

PART 2 PRODUCTS

2.1 VALVES

- A. Resilient Seated Gate Valves: Shall be used on all water mains less than sixteen (16) inches in diameter and all hydrant branches.

WATER MAIN VALVES AND APPURTENANCES

1. Valves shall be as manufactured by Mueller Co., Type A2360, or approved equal.
2. Meet or exceed the requirements of ANSI/AWWA C509.
3. Joints: Mechanical joint conforming to ANSI/AWWA C515.
4. Ductile iron body.
5. Bronze stem.
6. Resilient sealed wedge type:
 - a. Wedge: Fully encapsulated; no exposed iron.
7. Triple O-ring seal stuffing box.
8. Non rising stem.
9. Two (2) inch square operating nut.
10. Rated for 250 psi and tested to 500 psi.
11. Open: Clockwise (right).
12. All internal and external surfaces except rubber coatings shall be coated with fusion bonded epoxy to a minimum thickness of 8 mils:
 - a. Coating shall be non-toxic, impart no taste to water and shall conform to AWWA C-550.

2.2 VALVE BOXES

- A. Valve boxes shall be provided for each buried valve. They shall be:
 1. Domestic manufacture. Made in the USA.
 2. Cast iron with a cast iron cover.
 3. Cover shall have the word "WATER" cast into the cover in raised letters.
 4. Valve box barrel shall not be less than (5-1/4) inches in diameter.
 5. Shall be two (2) piece sliding type, providing a minimum overlap of six (6) inches.

6. The lower section shall enclose the operating nut and stuffing box/gear box of the valve and shall have a minimum diameter of 8 inches.
7. The box shall not transmit shock or stress to the valve.

PART 3 EXECUTION

3.1 HANDLING AND INSPECTION

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

3.2 INSTALLATION

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

END OF SECTION

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SECTION 02645

HYDRANTS

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 RELATED WORK

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

- 1. Section 02222, Earthwork
- 2. Section 02611, Ductile Iron Pipe and Fittings
- 3. Section 02640, Water Main Valves and Appurtenances
- 4. Section 02650, Thrust Blocks and Joint Restraints

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300, Submittals.
- B. Submit shop drawings showing valve box dimensions, materials and country of manufacturer.

1.4 STANDARDS

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

PART 2 PRODUCTS

2.1 HYDRANTS

- A. Hydrants shall be American Darling B-62, or approved equal:
 - 1. Barrel sections shall be 5-1/4-inch diameter.

2. Five (5) foot six (6) inch bury.
 3. Two (2) 2-1/2-inch hose nozzles.
 4. One (1) 4-1/2-inch pumper outlet.
 5. Replaceable brass nozzles.
 6. Breakaway flange.
 7. Mechanical joint shoe.
 8. Open clockwise (right).
 9. Be in full compliance with AWWA C502.
- B. Hydrants shall conform to National Standard Specification sizes in threads and nuts. Caps shall have retainer chains and rubber gaskets.

2.2 HYDRANT EXTENSION

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

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

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

3.2 FIELD MEASUREMENTS

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

3.3 PROPOSED HYDRANT LOCATIONS

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

3.4 INSTALLATION

A. Hydrants:

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

END OF SECTION

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SECTION 02650

THRUST BLOCKS AND JOINT RESTRAINTS

PART 1 GENERAL

1.1 DESCRIPTION

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

1.2 RELATED WORK

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

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications for mechanical joint restraints and push-on joint restraints.

PART 2 PRODUCTS

2.1 CONCRETE

- A. Concrete shall be as specified in Section 03300, Cast-In-Place Concrete.
 - 1. Minimum concrete strength shall be 3000 psi after 28 days.

2.2 JOINT RESTRAINTS

- A. Mechanical joint restraint shall be Megalug 1100 Series as manufactured by EBAA Iron Sales Inc., Eastland, Texas, or an approved equal.
 - 1. Glands shall be manufactured of ductile iron conforming to ASTM A536.

THRUST BLOCKS AND JOINT RESTRAINTS

2. The wedges shall be ductile iron, heat treated to a minimum hardness of 370 BHN
 3. Shall have a minimum working pressure of 350 psi for pipe diameters up to 16 inches with a minimum safety factor of 2:1.
 4. Twist-off nuts.
- B. Push-on joint restraints shall Field-Lok 350 gasket by U.S. Pipe or approved equal.

2.3 OTHER MATERIALS

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

PART 3 EXECUTION

3.1 THRUST BLOCKS

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

3.2 JOINT RESTRAINTS

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

- B. Pipe joints shall be restrained with push-on joint restraints for the minimum distances listed on the following table, and as shown by shaded area of pipe on the Drawings.

MINIMUM RESTRAINED LENGTHS

<u>FITTING</u>	<u>RESTRAINT LENGTH</u>
8" Valve or Dead End	38-feet in each Direction
6" Valve or Dead End	29-feet in each Direction
8" 45° Bend	9-feet in each Direction
8" 22.5° Bend	5-feet in each Direction
8" 11.25° Bend	3-feet in each Direction
8" x 8" x 8" Tee	12-feet in Branch
8" x 8" x 6" Tee	28-feet in Branch

Distances shown are based on 150 psi test pressure, 4-foot bury, soil type GW, trench type 3, and 1.5:1 safety factor. Changes in conditions will require revision to lengths.

- C. Restrained push on joints shall be installed with specified joint restraints. Restraints shall be installed in full accordance with manufacturer's instructions.

END OF SECTION

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SECTION 02660

SERVICE CONNECTIONS

PART 1 GENERAL

1.1 SUMMARY

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

1.2 RELATED WORK

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

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300, Submittals.
- B. Shop Drawings:
 - 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.

1.4 STANDARDS

- A. The following Standards form a part of these Specifications as referenced:
 - 1. AWWA C800 Underground Service Line Valves and Fittings.
 - 2. ASTM B-88 Type K Copper Tubing

1.5 QUALITY ASSURANCE

- A. Codes and Standards
 - 1. Plumbing Code Compliance: Comply with applicable portions of National Standard Plumbing Code pertaining to selection and installation of potable water system materials and products.
 - 2. Water Purveyor Compliance: Comply with requirements of Purveyor supplying water to project, obtain required permits and inspections.

SERVICE CONNECTIONS

B. Compliance

1. The Owner may require an affidavit from the manufacturer or vendor that the products furnished comply with all applicable provisions of AWWA C800 and ASTM B-88.

PART 2 PRODUCTS

2.1 GENERAL

- A. All materials shall be of domestic manufacture.
- B. The Owner has standardized the following products listed in this Section for service connections.

2.2 SERVICE TUBING

- A. Copper Water Tubing
 1. Conform to the provisions of ASTM B-88.
 2. Size: As indicated on the Drawings.
 3. Type K annealed (soft).
 4. Stainless steel inserts at connection points.
 5. Seamless.

2.3 CORPORATION STOPS

- A. Corporation Stop: Shall be as manufactured by A.Y. McDonald, Mueller Co., Red Hed Manufacturing Co., or an approved equal.
 1. Test Pressure: 175 psi.
 2. Full keyway and rigid liners.
 3. Ball style with copper, Compression ends.
 4. Size: As required by the service tubing.
 5. Comply with AWWA C800, Underground Service Line Valves and Fittings.

2.4 CURB STOPS

- A. Shall be A.Y. McDonald, ball-type with drain, Mueller Model H-15219 Mark II Oriseal, Red Hed B-415G, or an approved equal.
 - 1. Stops shall open LEFT.
 - 2. Full key with rigid liners.
 - 3. Compression ends.

2.5 CURB BOXES

- A. Curb boxes shall be of domestic manufacture by Ford, Hayes, or Mueller.
 - 1. Buffalo type-recessed lid, tar coated, cast iron, arch pattern base with inlaid covers.
 - 2. Covers shall be arch base style with brass pentagon nut, flush mounted, plug cover, and the word "water" shall be cast into the cover.
 - 3. Curb box shaft shall have a minimum inside diameter of 2-1/2-inch.

2.6 SERVICE SADDLE

- A. Service saddle for use on ductile iron with dual flattened coated steel straps shall be manufactured by Mueller Company or approved equal.
 - 1. Shall be used on all corporations installed on Class 50 or pressure class 350 D.I. pipe.
 - 2. Double strap design.
 - 3. Ductile iron with hot dipped zinc galvanized body.
 - 4. AWWA threads with Buna-N rubber gasket.
 - 5. Meet all applicable parts of ANSI/AWWA C800.
 - 6. Domestic manufacture

PART 3 EXECUTION

3.1 INSPECTION

- A. Service tubing which does not conform to the requirements of this specification shall be immediately removed from the site by the Contractor.

3.2 HANDLING PIPE

- A. The Contractor shall take care not to damage pipe by impact, bending, compression, or abrasion during handling, and installation. Joint ends of pipe especially, shall be kept clean.

3.3 SERVICE LOCATIONS AND SHUT-DOWNS

- A. All new service locations shown on the Contract Drawings shall be subject to field location approval by the Engineer and/or Owner. The locations of existing water services shall be located in the field by the Contractor.
- B. Connections to 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.
- C. Where a water service must be shut-down, it shall be the Contractor's responsibility to contact the party owning the service to arrange a shut-down schedule prior to doing any work.
 - 1. All such schedules must be approved prior to shut-down.
 - 2. Shut-down time shall be kept to a minimum so as to keep service off for the shortest possible time.
- D. After successful testing and chlorination, water services shall be installed as a "wet" tap as specified or directed by the Engineer. Exact locations of services shall be located in the field by the Contractor. A service shall be provided to the property line of parcels of property along the water main route, and connected to the existing water service. All services shall be installed to a minimum depth of 4-6" unless specifically shown or directed by the Engineer.

3.4 INSTALLATION OF TUBING

- A. Service Tubing.
 - 1. Where directed by the Engineer, the Contractor shall install new services including 1-inch and 2-inch tubing.
 - 2. For services outside the paved areas, trench excavation shall be utilized, with tubing being carefully laid in the bottom of the trench, backfill placed and compaction completed.
 - a. Care shall be taken to insure against kinks or crushed areas.
 - 3. Backfill around and to one (1) foot over the tubing shall not contain stones greater than one (1) inch in diameter.

SERVICE CONNECTIONS

4. For services to be installed beneath paved surfaces, a pneumatic drive device such as "Hole Hog" or equal, trenchless method, shall be utilized to drive the new service beneath the pavement.
5. Service tubing between the corporation stop and the curb stop shall be one (1) piece.
6. Tubing shall be connected to the curb stop and compression joints tightened.

3.5 APPURTENANCES

A. Corporation Stops.

1. Provide the necessary tap, sized for the fitting.

B. Curb Stops and Boxes.

1. Place valve box over stop, taking care that it is installed plumb.
2. Curb stops shall be key checked after adjustment of curb box to final grade.
 - a. If curb stop is not centered in the box, the box shall be removed and reset over the curb stop.

END OF SECTION

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SECTION 02667

TEMPORARY POTABLE WATER PIPING AND SERVICE CONNECTIONS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Provide temporary potable water piping and service connections as required by the Contract Documents.
 - 1. In general, the Contractor shall provide temporary distribution piping, piping disinfection, connections to supply sources (hydrants or pipe lines), service connections to properties presently being supplied, access ramps where temporary pipe line crosses driveways, trenching across roadways for temporary main or services and all other work necessary to provide temporary potable water service to properties affected by water main relocations.

1.2 RELATED WORK

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

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300, Submittals.
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed, to ensure compliance with the specified requirements.
 - 3. Prior to the start of construction, a temporary by-pass piping system shall be installed, chlorinated, and tested prior to installing temporary service connections. The contractor shall submit a by-pass piping plan to the Engineer for review and approval prior to installation. A mutually agreeable plan including location, method, and materials of the temporary by-pass piping system shall be the responsibility of the contractor. All components in the temporary by-pass piping system shall be NSF-61 approved.

1.4 STANDARDS

A. The following Standards form a part of these specifications as referenced:

1. ASTM D-1784 (PVC, Type 1, Grade 1, Class 12454/B.
2. ASTM D-2241 (PVC Plastic Pipe) pressure rated.
3. ASTM D-3130 (Joints and Couplings).
4. ASTM F-477 O-Rings.
5. AWWA C651 Water Main Chlorination.

1.5 QUALITY ASSURANCE

A. Codes and Standards

1. Plumbing Code Compliance: Comply with applicable portions of National Standard Plumbing Code pertaining to selection and installation of potable water system materials and products.
2. Water Purveyor Compliance: Comply with requirements of purveyor supplying water to project, obtain required permits and inspections.

PART 2 PRODUCTS

2.1 TEMPORARY DISTRIBUTION PIPING

A. PVC Piping:

1. Size: Four (4) inches in Fox Hill Road.
2. SDR 21, Class 160
3. Wall thickness 0.316 inches.

B. Couplings:

1. O-Ring type
2. Locking splines to ensure coupling remains under pressure.

C. Service Piping/Tubing:

1. Size: ¾ inch polybutylene
2. Pressure class 160
3. Meet the requirements of ANSI / AWWA C902.

D. Connection Fittings:

1. Provide all the necessary fittings, adapters, clamps, couplings and etc. to complete the service piping/tubing connections from the temporary potable water piping to the property being served.

PART 3 EXECUTION

3.1 GENERAL

A. The temporary distribution pipe shall be installed as required to provide potable water service where potable water service presently exists.

1. When necessary, the Contractor shall provide below ground taps to provide potable water service where fire hydrants cannot be used.
2. All temporary distribution piping connections to fire hydrants shall be made in such a manner that if it becomes necessary, they can be easily removed so that the fire hydrant can be used for firefighting purposes, with a minimum of effort.
3. At driveways and roadway crossings the temporary distribution pipe shall be installed in a shallow trench to be overlaid with temporary bituminous surfacing.
4. The Contractor shall furnish and maintain cones, barricades, flashing lights, signage and etc. during the time period in which the temporary potable water piping system is installed.

B. The by-pass piping shall have connections to active water mains on both sides of the street.

3.2 INSTALLATION

A. Prior to installing any section of temporary distribution piping, the Contractor shall consult with the local Fire Department and Owner and shall make any modifications to the piping that may be required by these agencies.

1. The temporary distribution piping and service pipe shall be chlorinated in accordance with AWWA C651.

TEMPORARY POTABLE WATER PIPING AND SERVICE CONNECTIONS

2. The operation of all valves utilized in connection with this Contract shall be performed by a representative of the Owner.
3. Temporary valving shall be provided to isolate sections of the temporary potable water piping.
4. Service connections shall be provided at required locations or as requested by the Owner.
5. A valved blow-off line shall be provided.

3.3 MAINTENANCE AND REMOVAL

- A. The Contractor shall maintain the temporary potable water piping in a safe and operative condition at all times.
 1. No temporary potable water piping shall be installed in freezing weather and such piping already in use shall be removed and drained.
- B. The Contractor shall remove the temporary potable water piping after the water main relocation has been completed, tested, chlorinated and accepted by the Owner, and the new service connections installed.
- C. The Contractor shall leave the street and adjacent properties in a neat and orderly condition and in every respect equal to or better than their original condition.

END OF SECTION

SECTION 02675

DISINFECTING WATER MAINS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included: Disinfecting water mains and their appurtenances, as required by the Contract Documents.
- B. The procedure for disinfecting water mains, as described in this section, generally consists of the following steps:
 - 1. Flushing the new water mains.
 - 2. Filling the new water mains with chlorinated water.
 - 3. Disinfecting the new water mains with chlorine solution.
 - 4. Flushing the chlorinated water from the new water mains.
 - 5. Taking samples for bacteriological analysis.
 - 6. Testing the samples at a state certified laboratory.
 - 7. Placing the new water mains into service.

1.2 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02611, Ductile Iron Pipe and Fittings
 - 2. Section 02676, Testing Piping Systems

1.3 SUBMITTALS

- A. The Contractor shall prepare a plan for disinfecting water mains and their appurtenances that describes the proposed schedule, the location of all sampling and flushing points, and the overall procedure for disinfecting. The plan shall also present the proposed chemicals to be employed, the strength of the chemicals and the equipment employed to apply them. The plan shall be presented to the Engineer for review not less than two weeks prior to the proposed time for disinfecting the water mains.

- B. Copies of all test results, as specified herein, shall be submitted directly to the Engineer from the laboratory that conducted the tests.

1.4 STANDARDS

- A. The following standards are referenced, in part, in this specification:
 - 1. Specific sections, or portions thereof, of AWWA C651 (latest revision) Disinfecting Water Mains, as further described herein.

1.5 COST OF DISINFECTING WATER MAINS

- A. All costs associated with disinfecting water mains, including water, chemicals and bacteriological analysis of samples, as further described in this Section, shall be paid for by the Contractor.

PART 2 PRODUCTS

2.1 WATER

- A. Water for flushing of water mains, preparation of chlorine solutions and filling of water mains for disinfection shall be potable drinking water.

2.2 CHEMICALS

- A. Chlorine for preparation of chlorine solutions for disinfection shall be sodium hypochlorite or calcium hypochlorite and shall conform to the requirements of ANSI/AWWA B300.
- B. Chlorine solutions shall be neutralized prior to disposal using sodium bisulfite, sodium sulfite or sodium thiosulfate.

2.3 WATER SAMPLE BOTTLES

- A. Sterile water sample bottles shall be obtained from a state certified laboratory.
 - 1. Sterile bottles for bacteriological analyses shall be treated with sodium thiosulfate to neutralize any residual chlorine.
 - 2. Two samples are required at each specified sampling point. One sample shall be analyzed for the presence of coliform bacteria and one sample shall be analyzed for the presence of heterotrophic plate count (HPC) bacteria.

2.4 BACKFLOW PREVENTER DEVICES

- A. Backflow preventer devices (reduced pressure devices), model to be State approved.

2.5 DECHLORINATOR

- A. Line purge dechlorinator with dichlorination tablets or other method acceptable to the Engineer. Dechlorinator shall have 2-1/2 inch NPT coupling and capacity flow rates of up to 1,600 GPM. Dechlorination tablets shall be ascorbic acid, sodium sulfite or sodium thiosulfate, capable of dechlorinating the flushed water. Dechlorinator shall be or Model LPD-250 as manufactured by Pollard Water, or approved equal.

2.6 CHLORINE RESIDUAL ANALYZER

- A. The chlorine residual analyzer shall be DR 300 by Hach, part number LPV445.97.00110 or equal.

PART 3 EXECUTION

3.1 WATER MAIN DISINFECTING

- A. After completion of all water main related construction, except water service connection installation, all water mains, valves, hydrants, hydrant connections and other appurtenances installed under this Contract shall, be disinfected in accordance with AWWA Standard C651, Section 4.4.3 (Continuous Feed Method), as modified herein.
 - 1. Owner approved backflow preventer shall be installed in the line to prevent backflow or siphonage of water into the existing water system.
 - 2. Taps for flushing, chlorination and sampling shall be installed by the Contractor at no additional expense to the Owner.
 - 3. Flush the new water mains with potable water to remove any contaminants and debris that may have entered the water mains during construction.
 - 4. The flushing velocity in the new water mains shall not be less than 2.5 feet per second. In the absence of a flow meter, flow rate shall be determined either by placing a pitot gage at the discharge or by measuring the time to fill a container of a known volume.
 - 5. Prepare a chlorine solution that will be continuously fed into the potable water that is used to fill the new water mains.

6. The chlorine solution shall be applied to the new water mains with a chemical feed pump designed to feed chlorine solutions.
7. Completely fill the new water mains with the chlorinated, potable water to remove any air pockets. The point of application shall be no more than 10 feet downstream from the beginning of the new water mains.
8. The chlorine solution shall be of sufficient strength to provide a minimum residual chlorine concentration of 25 milligrams per liter (mg/l) in the filled water mains.
9. New valves and hydrants shall be operated to insure their proper disinfection.
10. Isolation valves shall be maintained in a closed position to prevent chlorinated water from entering the existing water distribution system.
11. Chlorinated water shall remain in the main for a minimum of 48 hours.
12. The minimum residual chlorine concentration at the end of the 48 hour holding period shall be 10 mg/l.
13. After the 48-hour retention period, chlorinated water shall be flushed from every hydrant branch on the main until the chlorine concentration leaving the main is no higher than that generally in the system or less than 1.0 mg/l.
14. Chlorinated water that is flushed from the mains shall be neutralized by the addition of a dechlorinating agent so that the residual chlorine concentration is zero.
15. Chlorinated water shall be discharged in a manner that will not adversely affect flora and fauna or drainage courses and shall conform to applicable State regulations for waste discharge.
16. The location of the discharge for the dechlorinated water shall be approved by the Engineer and the Owner.

3.2 BACTERIOLOGICAL TESTS

- A. A minimum of 24 hours after flushing and before the new water mains are placed in service, the Contractor shall collect water samples for testing of the bacteriological quality of the water.
 1. No hose or fire hydrant shall be used in the collection of samples.
 2. A sampling tap shall consist of a standard corporation stop installed in the main with a PVC gooseneck assembly.

3. Samples for bacteriological testing shall be collected in sterile bottles treated with sodium thiosulfate and furnished by the state certified laboratory that will perform the tests.
 4. Unless otherwise directed by the Engineer or the Owner, the minimum number of samples for bacteriological analysis shall be as follows:
 - a. One sample every 1,200 linear feet of newly installed water mains.
 - b. One sample at the end of the newly installed water mains.
 - c. One sample at each branch.
 5. One round of sampling shall be conducted on water distribution systems that continuously maintain a chlorine residual.
 6. Two rounds of sampling shall be conducted on water distribution systems that do not continuously maintain a chlorine residual. The second round of sampling shall be conducted a minimum of 24 hours after the first round of samples is taken.
- B. All bacteriological tests shall be performed by a state certified laboratory.
1. Two bacteriological tests shall be performed on all samples:
 - a. one coliform bacteria, and
 - b. one heterotrophic plate count (HPC) bacteria.
 2. Test results on all samples and a copy of the chain of custody shall be mailed directly to the Engineer and Owner from the laboratory.
 3. The disinfection procedure shall be considered satisfactory only if the results of all tests confirm the following:
 - a. the absence of coliform bacteria in all samples taken and
 - b. the HPC bacteria are less than 500 colony forming units per milliliter (cfu/ml) in all samples taken (unless the water supplier has established a stricter HPC limit from baseline data for their water distribution system, in which case the results of the HPC bacteria tests shall meet the stricter limit).
 4. The new water mains may be placed in service if the results of the disinfection procedure are satisfactory and the Engineer and Owner have granted their permission.

5. If the initial disinfection procedure fails to produce satisfactory results, the new water mains shall be flushed and resampled as described above. If the test results from the resampling also fail to produce satisfactory results, the entire disinfection procedure shall be repeated.

END OF SECTION

SECTION 02676

TESTING PIPING SYSTEMS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Included: Provide pressure/leakage tests as required by the Contract Documents.

1.2 RELATED WORK

- A. Documents affecting the work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 1. Section 02611, Ductile Iron Pipe and Fittings
 - 2. Section 02640, Water Main Valves and Appurtenances
 - 3. Section 02675, Disinfecting Water Mains

1.3 STANDARDS

- A. The following American Water Works Association Standard shall form a part of this specification as referenced:
 - 1. AWWA C600 Installation of Ductile Iron Water Mains and Their Appurtenances.

1.4 SUBMITTALS

- A. Shop Drawings: Submit the following in accordance with Section 01300 – Submittals:
 - 1. Testing schedule and test procedure.
 - a. Indicate proposed time and schedule of testing on schedule.

b. Indicate test procedure requirements as follows:

- (1) Limits of each pipe to be tested.
- (2) Position of all valves during testing.
- (3) Location of temporary bulkheads.
- (4) Other applicable procedures.

1.5 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 three (3) working days prior to commencement of work.

PART 2 PRODUCTS

2.1 WATER

A. The Owner shall furnish water free, for flushing and testing the water main, if hydrants or other connection points are convenient to the work. Otherwise, the Contractor shall be responsible for securing an acceptable potable water supply at no additional cost to the Owner.

2.2 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
 - f. Restraints

PART 3 EXECUTION

3.1 TESTING

A. A formal pressure/leakage test shall be required of the water mains, valves and appurtenances in the system constructed.

1. The pressure/leakage test shall be conducted in accordance with these specifications and the applicable requirements of AWWA C600, Section 4.
2. Where any section of a water main is provided with concrete thrust blocks, the test shall not be made until at least 5 days have elapsed since the concrete was placed.
3. If high-early-strength cement is used in the concrete thrust blocks, the test shall not be made until at least 2 days have elapsed since the concrete was placed.
4. Prior to testing, the pipe line or section thereof, the section to be tested shall be thoroughly flushed, and all air expelled. All air shall be expelled by appropriate methods including the use of corporation stops installed by the Contractor, at no additional cost to the Owner, at high points along the water main.
5. After all the air has been expelled, and the corporation stops closed, the test pressure shall be applied by means of a pump connected to the pipe.
6. The pump, pipe connections, and all necessary apparatus including the gages, shall be furnished by the Contractor.

B. PRESSURE TESTING

1. Test pressure shall be measured and applied at the elevation of horizontal center line of pipe at selected location.
2. Multiply test pressure value in psi by 2.31 to obtain test pressure value in feet.
3. Unless otherwise specified, the test pressure shall be 150 psi or 150 percent of the working pressure, whichever is greater, but in no case shall the pressure exceed 250 psi.
4. Ensure pressure gauges are accurately calibrated.
5. Each valve shall be closed so that it is pressure tested on each side during the test procedures.

6. After applying test pressure, wait until pressure stabilizes before starting test.
7. This pressure shall be maintained for 2 hours.

C. 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 leakage test pressure for pressure testing of reach during leakage test.
 - b. Maintain hydrostatic pressure within plus or minus 5 psi during entire time of leakage measurements.
4. Leakage Measurement:
 - a. Do not attempt measurement of leakage until pipe has been filled and allowed to sit for 24 hours, trapped air has been vented and constant test pressure has been established.
 - b. Measure leakage by means of an approved calibrated barrel on the suction side of the pump.
 - (1) Ensure that water barrel is accurately calibrated.
5. Allowable Leakage:
 - a. Pump the main to specified test pressure. When pressure is reached, stop pump. If pressure drops 5 psi or more, start pump and measure the quantity of water required to maintain the specified pressure. Repeat this process as required.
 - b. Ensure that the pipe reach does not exceed the allowable leakage rate or exceeds the allowable hydrostatic variation of 5 psi.

- c. Calculate allowable leakage with the following formula:

Q = 0.0075 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 average test pressure in psi (N=12.25 for 150 psi test pressure)
- d. Calculate allowable leakage separately for each diameter and add resulting allowable leakage rates to obtain total allowable leakage for entire reach.
- e. Measure and record volume of water pumped into main to maintain test pressure. If actual volume exceeds the allowable, contractor shall stop test and initiate corrective measures.
- f. The total leakage from the pipeline or sections thereof shall not exceed the calculated Q (allowable leakage in gallons per hour).
- g. Should the pipeline or sections thereof not come within the permissible leakage limits, the Contractor (at his own expense) shall be required to excavate and locate the source of leakage and make repairs.

3.2 FIELD QUALITY CONTROL

A. Inspection:

- 1. Locate defective joints and pipe materials during pressure testing.
- 2. Locate and repair leaking joints, valves and other defective items of work to reduce pipe leakage to an amount acceptable to Engineer, or where applicable, the Owner's requirements.

B. Repairs:

- 1. Repairs to pipelines shall require removal of the defective section of pipe, joint, valve or fitting.
- 2. New materials to replace those replaced as described above shall be installed with mechanical joint solid sleeves. All mechanical joints shall be installed with restraints as specified in Section 02650 Thrust Blocks and Joint Restraints.

3. Locate and repair leaking joints, valves and other defective items of work to reduce pipe leakage to an amount acceptable to Engineer, or where applicable, the Owner's requirements.
 4. Disinfect the repair section in accordance with Specification Section 02675 Disinfecting Water Mains.
- C. After the Contractor has notified the Engineer that repairs have been made, the test shall be repeated until the pipeline or sections thereof are within the allowable leakage.
- D. All repairs, including labor, materials, equipment, traffic details, paving and other related costs required to locate and repair defective work shall be performed at no additional cost to the Owner.

END OF SECTION

SECTION 02930

LOAM AND SEED

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work included: Provide loam and seed, finish grade, apply lime, fertilizer and seed to all the disturbed lawn areas of the water main construction.

1.2 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 1. Section 01610, Delivery, Storage and Handling
 - 2. Section 02015, Test Pits
 - 3. Section 02222, Earthwork

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.
- C. If the results of the hydraulic seeding operation (if utilized) are unsatisfactory, the method shall be abandoned, and seeding shall be required by the sowing method.

1.4 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300, Submittals.
- B. Product data: Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- C. Schedule for seeding and fertilizing.

PART 2 PRODUCTS

2.1 TOPSOIL

- A. Topsoil stripped from the site and stored, shall be approved before reuse.
 - 1. Topsoil from the site shall be treated to conform to the requirements for topsoil furnished from offsite sources.
 - 2. If the required quantity of suitable topsoil is not available from stripping of the site, or if it is not approved, topsoil from outside sources shall be furnished.
 - 3. Stockpiled topsoil used for this work shall be screened before being spread.
 - 4. Surplus topsoil not required to fulfill the requirements of the Contract shall be properly disposed of unless otherwise directed by the Owner.

2.2 TOPSOIL FURNISHED FROM OFFSITE SOURCES

- A. Topsoil shall be fertile, friable, natural topsoil typical of the locality, and obtained from a well-drained site.
 - 1. It shall be without admixture of subsoil or slag.
 - 2. Shall be screened.
 - 3. Topsoil as delivered to the site shall have an acidity range of pH 5.0 to 6.5 and shall contain not less than 5% organic matter as determined by loss on ignition of moisture-free samples dried at 100 degrees Centigrade.
 - 4. If required, limestone shall be added to the topsoil to adjust the pH, so that it complies with the required limits.
- B. Mechanical Analysis: Topsoil shall meet the following mechanical analysis.

Size	% Passing	% Retained
1-1/4" screen	100	0
1/2" screen	97-100	0-3
No. 100 mesh sleeve	40-60	40-60

2.3 LIME

- A. Lime shall be ground limestone containing not less than 85 percent calcium and magnesium carbonates.
 - 1. Ground to such fineness that at least 50 percent will pass through a 100-mesh sieve and at least 90 percent shall pass through a 20-mesh sieve.

2.4 GRASS SEED

A. General: Provide grass seed which is:

1. Free from noxious weed seeds, and recleaned.
2. Grade A recent crop seed.
3. Treated with appropriate fungicide at time of mixing.
4. Delivered to the site in sealed containers with dealers guaranteed analysis.

B. Proportions by Weight (Level Areas):

1. Chewing Fescue, 60 percent.
2. Red Top, 10 percent.
3. Kentucky Blue, 20 percent.

C. Proportions by Weight (Slopes):

1. Creeping Red Fescue, 50 percent.
2. Perennial Rye Grass, 20 percent
3. Red Clover, 10 percent.
4. Winter Rye, 15 percent

D. Requirements:

1. Seed shall be furnished and delivered premixed in the proportions specified above.
2. All seed shall comply with State and Federal seed laws.
3. A certificate of compliance with the specifications shall be submitted by the manufacturer with the shipment of the seed. The certificate shall include the guaranteed percentage of purity, weed content and germination of the seed, net weight and date of shipment.
4. No seed shall be sown until the Contractor has submitted the above-mentioned certificate to the Engineer.

2.5 FERTILIZER

- A. Provide commercial blended 10-20-10 fertilizer delivered to the site in bags labeled with the manufacturer's guaranteed analysis.
 - 1. At least 40% of the nitrogen in the fertilizer used shall be in slowly available (organic) form.
 - 2. Fertilizer shall be stored so that when used it will be dry and free flowing.

2.6 LOAM

- A. Loam shall be a mixture of sand, silt, and clay particles as to exhibit sandy and clay-like properties, in and about equal proportions.
 - 1. Shall be free to stumps, roots, heavy or stiff clay, stones larger than 1-inch in diameter, lumps coarse sand, noxious weeds, sticks, brush or litter.
 - 2. Shall be obtained from previously excavated materials, stockpiled for this use, or material furnished by the Contractor.

2.7 HYDRAULIC SPRAY MACHINE

- A. Shall be designed specifically for seed dissemination.
- B. Shall allow materials to be mixed with water in the machine and kept in an agitated state to keep materials uniformly suspended in the water.
- C. Shall be designed to provide equal quantities of required materials over a particular spraying area.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

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

3.2 APPLICATION

- A. Application of Topsoil
 - 1. Topsoil shall be spread to a compacted depth of:
 - a. Four (4) inches for cross country areas.

- b. Areas to have topsoil applied to them shall be scarified or otherwise roughened, just prior to the application.

B. Seedbed Preparation

1. Grade areas to be seeded to a smooth uniform grade.
2. Roll, scarify, rake and level as necessary to obtain true, even surfaces
3. Meet existing grades.
4. All seeded areas shall slope to drain.
5. All finish grades shall meet approval before grass seed is sown.

C. Application Rates of Limestone, Aluminum Sulfate, Fertilizer and Seed

1. Limestone or Aluminum Sulfate shall be applied and thoroughly incorporated in the layer of loam or topsoil to adjust the acidity of the material.
2. The rate of application of the limestone will be determined by the pH value.
3. Fertilizer shall be applied at the rate of 20 pounds per 1000 square feet.
4. The seed mixture shall be sown at the rate of 5 pounds per 1000 square feet.

D. Fertilizing and Liming

1. Fertilizing and liming shall be done when the soil is in a moist condition and at least 24 hours before the sowing of the seed.
2. The fertilizer and lime shall be applied to the soil by means of a mechanical spreader or other approved method capable of maintaining a uniform rate of application.
3. Thoroughly harrowed, raked or otherwise mixed with the soil to a depth of not less than 2 inches.
4. The fertilizer and lime shall not be applied together.

E. Time of Seeding

1. The recommended seeding periods are from April 1 to June 1, and from August 15 to October 1.
2. The Contractor may choose to seed at other times but regardless of the time of seeding he shall be responsible for a full growth of grass.

3. When directed he shall re-fertilize and reseed areas on the project which do not develop a satisfactory growth of grass.
4. Re-fertilizing and reseeding shall be incidental to the original seeding item requirements.

3.3 MAINTENANCE

- A. The Contractor shall be responsible for the proper care of the seeded areas during the period when the grass is becoming established.
 1. This period shall extend for two months after a successful uniform stand of grass is produced.
 2. The Contractor shall reseed all areas as necessary to obtain a uniform stand of grass, free from bare spots.
 3. Any seeded areas which fail to show a uniform stand of grass shall be reseeded until all areas are covered.
 4. Any and all additional seeding shall be at the Contractor's expense.
 5. If necessary, barricades of brush or other materials and suitable signs shall be placed to protect the seeded areas.
 6. Any washout which occurs shall be regraded and reseeded at the Contractor's expense until a good sod is established.

3.4 GUARANTEE PERIOD

- A. All seeded areas shall be guaranteed by the Contractor for not less than one (1) full year from the date of substantial completion.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 DESCRIPTION

- A. The work of this section includes all labor, materials, tools, and equipment required for the furnishing of all materials required for cast-in-place concrete as required by the Contract or as directed by the Owner.

1.2 QUALITY ASSURANCE

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

1.3 SUBMITTALS

- A. None required under this Section.
- B. Strength:
 - 1. All concrete shall be designed to have a minimum 28 day compressive strength of 4,000 psi except as otherwise noted on the Drawings or specified herein.

1.4 PRODUCT HANDLING

- A. Bags of cement shall be stored in a dry area which is protected from the weather.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement
 - 1. Cement shall meet the requirements of ASTM C150, Type II, low alkali. Brands of cement shall be subject to the approval of the Engineer. Do not change the brand of cement during progress of the Work except as approved in writing by the Engineer.

CAST-IN-PLACE CONCRETE

B. Aggregates

1. All aggregates shall conform to the standard specifications for Concrete Aggregates, ASTM C33.

2. Fine Aggregates:

- a. Fine aggregates shall consist of sand or screenings of gravel or crushed stone, well graded from fine to coarse; clean and free from soft particles, clay, loam or organic matter, with the volume removed by sedimentation not more than three percent. When tested in accordance with ASTM C40 for organic impurities, the color of the supernatant liquid above the test sample shall show not darker than organic plate No. 1.
- b. Fine aggregate shall conform to the following grading:

<u>U.S. Standard Sieve Size</u>	<u>Percent Passing</u>
3/8-inch	100
No. 4	95 - 100
No. 8	80 - 100
No. 16	60 - 85
No. 30	25 - 60
No. 50	10 - 30
No. 100	2 - 10

3. Coarse Aggregates:

- a. Coarse aggregates shall consist of crushed stone or washed gravel having clean, hard, durable, uncoated particles, free from dust, dirt, or other deleterious substances; and free from thin, flat or elongated particles. The test for organic impurities specified for fine aggregate shall also apply to coarse aggregate. Maximum size shall be 3/4 inch for all concrete 8 inches and less in thickness. For heavier walls, footings and mass concrete the maximum size may be increased to 1-1/2 inch, provided the space between the reinforcing bars therein is 1-1/3 greater than the maximum aggregate size.
- b. Coarse aggregate shall conform to the grading given in Table 2 of ASTM C33 for sizes No. 467, 57, 67, 7, and 8.

C. Water: Water shall be clean, fresh and free from oil, acid, salt, alkali, sewage, organic matter, and other deleterious substances.

- D. Admixtures: Admixtures shall be used as follows: The use of products other than those named herein will be allowed only with the written approval of the Engineer.
1. Air Entraining Agent: The air entraining admixture shall be a chloride free, purified and modified salt of a sulfonated hydrocarbon resin in liquid form conforming to ASTM C260.
 2. Water Reducing Agents: Except when otherwise ordered by the Engineer or noted elsewhere herein, all normal structural concrete shall have a water reducing agent added. The admixture shall be a salt of lignosulfonic acid in liquid form conforming to ASTM C494, Type A. The air entraining action of the water reducing agent shall be taken into account and the air entraining agent limited accordingly.
 3. Water Reducing-Retarding Agents: When the ambient temperature rises above 70 degrees F., the water reducing agent shall be replaced in whole or in part with a water reducing-retarding agent conforming to ASTM C494, Type D. The admixture shall be used in such amounts as will produce concrete with a set time equal to that which it would have at 70 degrees F. without the retarder.
 4. Set Accelerator: Where a set accelerator is allowed under the provisions of SECTION 03345, Concrete Placing, Curing, and Finish, it shall be non-chloride conforming to ASTM C494, Type C and Type E.
 5. Superplasticizer: Superplasticizing admixtures used to produce flowing concrete may be approved for use in concrete in any part of the structure. The dosage rate depends on the slump of the base concrete which should be kept constant and low (2-1/2 to 3 inches). Superplasticized concrete can lose slump in 60 to 90 minutes, or sooner if temperature is above 70 degrees F, therefore the admixture should be added to the mix at the project site if there is a probable combination of long concrete haul and warm temperature during placing operation. Otherwise the admixture should be added in accordance with the manufacturer's instruction.
- E. Epoxy Grout: Epoxy grout shall conform to ASTM C881, Type III, Grade 2, Class C. Color shall be selected by the Engineer.

PART 3 EXECUTION

3.1 CONCRETE MIXING

A. Class A Concrete

1. Class A Concrete shall have a minimum compressive strength, at 28 days, of 3500 psi, with a maximum water content of 6.4 gal/100 lbs and a minimum content of 520 lbs/cubic yard.

B. Class B Concrete

1. Class B Concrete shall have a minimum compressive strength, at 28 days, of 2500 psi, with a maximum water content of 7.4 gal/100 lbs and a minimum content of 430 lbs/cubic yard. Class B concrete may be mixed on site using a 1:2.5:5 mix and made with no less than 4.5 bags of cement per cubic yard.

C. Ready Mix Concrete

1. Ready mix concrete shall comply with ASTM C94.

3.2 PLACEMENT OF CONCRETE

A. Concrete shall be carefully placed to ensure dense, compact concrete. Concrete shall be thoroughly spaded or vibrated into position without disturbance of pipelines or other materials.

1. Concrete shall be placed with as little slump as practicable.
2. The pipe shall be securely braced, both vertically and horizontally, if it is to be encased, to prevent flotation.
3. The sides of thrust blocks shall be formed.
4. Concrete shall not be placed over bolts or nuts so as to prevent the removal of the joint glands.
5. Backfill shall not be placed on the concrete until the concrete has set firm.

END OF SECTION