

HANCOCK ASSOCIATES



**Contract Bid Documents
for the Mill, Forest and School Street Utility
Improvement Project**

PREPARED BY:

Hancock Associates
#25770

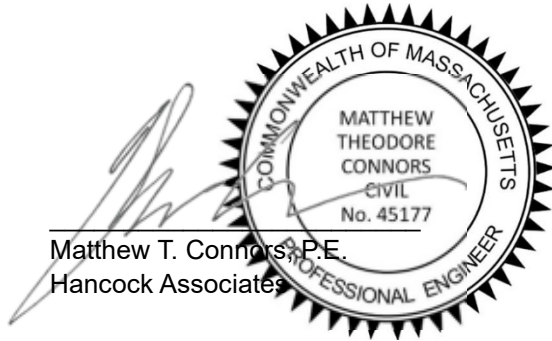
PREPARED FOR:

Manchester by the Sea DPW
March 2024

SECTION 00 01 07

SEALS PAGE

The engineering material and data contained in these Contract Documents were prepared under the supervision and direction of the undersigned, whose seal as a registered professional engineer is affixed below.



Matthew T. Connors, P.E.
Hancock Associates

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SECTION 00 01 10

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SECTION 00 11 16

INVITATION TO BID

The Town of Manchester-By-The-Sea, Massachusetts (Owner) invites Bidders to submit sealed Bids for the Mill, Forest and School Street Utility Improvement Project, which includes, but is not limited to replacing existing water mains and all related appurtenances on Forest and School Streets, installation of sewer force main and all related appurtenances on Mill and Forest Streets and all materials and equipment, services and construction inherent to the Work reflecting the agreed upon Work Scope, schedule and pricing.

The Project being bid is subject to Massachusetts General Laws, Chapter 30, Section 39M. A pre-Bid conference will not be held.

Sealed Bids will be received until 11:00 p.m. local time on May 15, 2024 at Town Hall (10 Central Street) Room 5, Manchester-By-The-Sea, MA 01944. Attention: Mr. Charles Dam, P.E. Bids will then and there be publicly opened and read aloud. Bids received after the time of announced opening will not be accepted.

A set of Bidding Documents may be examined at the following location(s) on or after **April 17, 2024, at 11:00 a.m.**

Issuing Office:

Manchester-By-The-Sea, Massachusetts
Town Hall
10 Central Street, Department of Public Works Office, Room 6
Manchester-By-The-Sea, MA 01944

Sets of Bidding Documents may be obtained on or after **April 17, 2024, at 11:00 a.m.** electronically by request to:

Matthew Connors, P.E.
Hancock Associates
mconnors@hancockassociates.com

Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of the incomplete sets of Bidding Documents or for modifications to the Bidding Documents including electronic conversion.

Bid security in the amount of 5 percent of the Bid must accompany the Bid in accordance with the instructions to Bidders.

Minimum wage rates as issued by the Director of the Executive Office of Labor and Workforce Development, Department of Labor Standards under the provisions of Massachusetts General Laws, Chapter 149, Sections 26 to 27D inclusive, as amended, apply to this Project. It is the responsibility of the Bidders, before Bid opening, to request, if necessary, any additional information on Minimum Wage Rates for those trades people who may be employed for the proposed Work under the resulting Contract.

Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be eligible or responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project or the public to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

END OF SECTION

SECTION 00 21 13

INSTRUCTION TO BIDDERS

ARTICLE 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions, if any. Additional terms used in these Instructions to Bidders have the meanings indicated below and as may be included in the Supplementary Instructions to Bidders.
- A. *Issuing Office* – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered identified in the Invitation to Bid.
 - B. *Supplements* – Those portions of the Bidding Requirements to be submitted with and made a condition of a Bid including required submittals.
 - C. *Notice of Intent to Award* – The written notice to the Successful Bidder indicating, conditions precedent to receiving a Notice of Award and Agreement for execution.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 A set of Bidding Documents may be examined and obtained as stated in the Invitation to Bid.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents, Bidding Documents provided by third parties, or for modifications to the Bidding Documents not made by official Addenda, including electronic conversion.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data requested in the Bidding Documents, and within the time frames stipulated upon Owner's request.
- 3.02 Bidders shall meet minimum criteria regarding experience and qualifications set forth in the General Requirements and the Specifications.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS

- 4.01 *Subsurface and Physical Conditions*
- A. Not used
- 4.02 *Underground Facilities*
- A. Not used

4.03 *Hazardous Environmental Condition*

- A. Not used

4.04 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;
- B. become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. consider the information known to Bidder; information and observations obtained from visits to the Site and the Bidding Documents; with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;
- E. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid, and in accordance with the other terms and conditions of the Bidding Documents;
- F. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- G. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.05 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of the Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – PRE-BID CONFERENCE

- 5.01 A pre-bid conference will not be held.

ARTICLE 6 – SITE AND OTHER AREAS

- 6.01 The Project Site will be primarily within the paved right of way on each of the streets involved. Portions of the site are within the buffer zone to riverfront, bordering vegetated wetland and FEMA 100-year floodplains.
- 6.02 Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the Owner in writing as follows. Submission of questions via email is acceptable.

Town of Manchester-by-the-Sea
Town Hall
10 Central Street
Manchester-by-the-Sea, MA 01944
Attention: Nate Derosiers
Telephone (978) 526-2000
Email: desrosiersn@manchester.ma.us

- 7.02 Interpretations or clarifications considered necessary by Owner in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Owner as having received the Bidding Documents. Questions received after **5:00 p.m., May 8, 2024** will not be answered. Only answers in the Addenda will be binding. Oral statements, interpretations, and clarifications may not be relied upon and will not be binding or legally effective.
- 7.03 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer, will be available for examination at the Issuing Office and will be mailed or delivered electronically to all parties recorded by Engineer as having received the Bidding Documents.

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's minimum Bid price and in the form of a certified check, treasurer's or cashier's check, or money order, or a Bid bond on or consistent with the form included in the Bidding Documents in Section 00 43 13 issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General and Supplementary Conditions, if any.
- 8.02 The Bid security of the Successful Bidder will be retained until such Bidder has furnished the required contract security, met the conditions of the Notice of Intent to Award (if any) and Notice of Award, and executed the Agreement, whereupon the Bid security will be returned. If the Successful

Bidder fails to comply with the conditions set forth in the Notice of Intent to Award (if any) and Notice of Award within the time specified therein, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Agreement or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned. See Supplementary Instructions to Bidders (if any) for additional information.

- 8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within 5 days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

- 9.01 Substantial Completion shall be as stated in the Agreement Form

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Liquidated damages will be as stated in the Agreement Form.

ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

- 11.01 The Contract, if awarded, will be on the basis of materials and equipment and construction methods or procedures specified or described in the Bidding Documents without consideration of possible substitute or “or-equal” items. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment and construction methods or procedures may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS

- 12.01 The Bidding Documents may require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner with the Bid.
- 12.02 As required in the Bidding Documents, or within 5 days after Bid opening if requested by Owner, Bidder shall submit a listing and experience statement with pertinent information regarding similar projects and other evidence of qualification for each Subcontractor, Supplier, individual, or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute without an increase in the Bid.
- 12.03 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest responsible Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General and Supplementary Conditions, if any.

- 12.04 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form and Supplements are included with the Bidding Documents.
- 13.02 Bids are to be submitted as indicated in the Bid Form. All blanks on the Bid Form shall be completed in ink or typewritten and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form.
- 13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.
- 13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.
- 13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.06 A Bid by an individual shall show the Bidder's name and official address.
- 13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.08 All names shall be printed in ink below the signatures.
- 13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.10 Postal and e-mail addresses and telephone numbers for communications regarding the Bid shall be shown.
- 13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form. See Supplementary Instructions to Bidders for additional requirements, if any.
- 13.12 Bidders are advised to carefully review those portions of the Bid Form and Supplements requiring Bidder's representations and certifications that are to be submitted with a Bid or subsequent to the Bid opening and made a condition of the Bid.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

- 14.01 *Bid Pricing*

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid Form. Bid prices shall be stated in both words and figures.
- B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price included in the Bid Form. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General and Supplementary Conditions, if any.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between prices written in words and prices written in figures will be resolved in favor of prices written in words.

14.02 Alternates (if any)

- A. Bidders shall include a separate price for each alternate described in the Bidding Documents as provided for in the Bid Form and Supplements, if any. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate and will be applied in the same order as listed in the Bid form.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished a copy of the Bid Form, the Bid Security Form and Supplements. An original signed hard copy of the Bid Form, the original of the Bid security, Supplements (as listed in the Bid Submittal Checklist), and the Bid Submittal Checklist are to be completed and submitted.
- 15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Invitation to Bid and shall be enclosed in a plainly marked package with the Project title, the name and address of Bidder, and shall be accompanied by the Bid security and other required documents.
- 15.03 If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation “BID ENCLOSED.” A Bid sent by mail or courier shall be addressed to Owner as described in Section 00 11 16.
- 15.04 Bidders shall be responsible to confirm the ability of overnight mailing or courier services to deliver to the Owner’s offices.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.
- 16.02 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is re-Bid, that Bidder will be disqualified from submitting a Bid on the Work.

ARTICLE 17 – OPENING OF BIDS

- 17.01 Bids will be opened at the time and place indicated in the Invitation to Bid and, unless obviously non-responsive, read aloud publicly.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible or eligible or does not meet the specified qualification or quality requirements, based on poor references or otherwise. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project or public to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate Contract terms with the Successful Bidder.
- 19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data as may be requested in the Bid Form or prior to the Notice of Award.
- 19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities are submitted.
- A. Owner may also consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.
- A. Owner may conduct reference checks for the projects listed by the Bidder. Poor references may be a basis for deeming Bidder as not responsible. Reference questions will include, but are not limited to, product quality and durability, overall work quality, performance, timely delivery/completion, customer service, and general customer satisfaction.

- 19.06 If the Contract is to be awarded, Owner may award the Contract to the responsive, responsible, and eligible Bidder, offering the lowest price for the Bid and whose Bid is in the best interests of the Project or public.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

- 20.01 Article 5 of the General Conditions and Supplementary Conditions, if any, set forth Owner's requirements as to performance and payment bonds and insurance. The Successful Bidder shall deliver such bonds and evidence of insurance coverage within 10 days of receipt of the Notice of Award.

ARTICLE 21 – SIGNING OF AGREEMENT

- 21.01 The Owner will issue a Notice Award to the Successful Bidder in the form included in Bidding Documents. Within 10 days of receipt of the Notice of Award, the Successful Bidder shall comply with the conditions set forth therein and provide requested information.
- 21.02 Based on required reviews and approvals, Owner will thereafter provide the required number of counterparts of the Agreement and other Contract Documents which are identified in the Agreement. The Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and other Contract Documents to Owner within the time specified by the Owner. After obtaining required reviews and approvals for Contract execution, Owner shall return one fully signed counterpart the Agreement and other Contract Documents.

ARTICLE 22 – RETAINAGE

- 22.01 Provisions concerning retainage are set forth in the Agreement.

ARTICLE 23 – CONTRACTOR'S WARRANTY AND GUARANTEES; CORRECTION PERIOD

- 23.01 Provisions concerning Contractor's general warranty and guarantees, and correction period are set forth in Articles 6.19, 13.06, 13.07, 13.09 and 14.03 of the General and Supplementary Conditions, if any.

ARTICLE 24 – EQUAL EMPLOYMENT OPPORTUNITY, ANTI-DISCRIMINATION, AND AFFIRMATIVE ACTION

- 24.01 Provisions regarding the requirements for equal employment opportunity, anti- discrimination, and affirmative action programs, if any, are set forth in the Supplementary Conditions.

ARTICLE 25 – SAFETY AND HEALTH REGULATIONS

- 25.01 This Project is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR, Part 1926 and to all subsequent amendments and other requirements identified in Section 00 73 19 of the Supplementary Conditions.

ARTICLE 26 – SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

- 26.01 Supplementary Instructions to Bidders, if any, are included in Section 00 22 13 and may include certain provisions required by Laws and Regulations and funding agencies. Bidders are solely responsible to determine, obtain, review, and interpret the full text of applicable Laws and Regulations.

END OF SECTION

SECTION 00 22 13

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

The following supplement of modify the Instructions to Bidders pursuant to Article 26 therein. This section does not represent or reflect all applicable Laws and Regulations and may only include excerpts, portions, and para-phrasing of certain Laws and Regulations. Bidders are solely responsible to determine, obtain, review, and interpret the full text of applicable Laws and Regulations.

1.01 Applicable Laws for Bid and Award; General

- A. This Contract is being bid under the provisions of Massachusetts General Law (MGL) Chapter 30, Section 39M, *Contracts for construction and materials; manner of awarding*.

1.02 Additional Defined Terms

- A. *Bid security* – per the Instructions to Bidders. Also “bid deposit” as used in MGL Chapter 30, Section 39M.
- B. *Lowest Responsible and Eligible Bidder* – Also the Successful Bidder. As defined in MGL Chapter 30, Section 39M,

“The term “lowest responsible and eligible bidder” shall mean the bidder: (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who shall certify, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who shall certify 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; (4) who, where the provisions of section 8B of chapter 29 apply, shall have been determined to be qualified thereunder; and (5) who obtains within 10 days of the notification of contract award the security by bond required under section 29 of chapter 149; provided that for the purposes of this section the term “security by bond” shall mean the bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority; provided further, that if there is more than one surety company, the surety companies shall be jointly and severally liable.”

1.03 Other Requirements of the MGL

- A. **Foreign Corporations:** The provisions of MGL Chapter 30, Section 39L, *Public construction work by foreign corporations; restrictions and reports*, requires that if a Bidder is a foreign corporation, it shall provide with its Bid, a certificate from the Commonwealth of Massachusetts Secretary of State stating that the corporation has complied with requirements of Section 15.03 of subdivision A of Part 15 of MGL Chapter 156D and the date of compliance, and further has filed all annual reports required by Section 16.22 of subdivision B of Part 16 of said Chapter 156D, and further, will provide such certificate for each Subcontractor that is a foreign corporation if it receives a Notice of Award. Also see Section 00 45 05 of the Bidding Requirements.

- B. **Taxes:** Bidder shall submit with its Bid, a “Certificate of Good Standing” with respect to all returns due and taxes from the Commonwealth of Massachusetts Department of Revenue certifying Bidder has complied with all laws relating to taxes, reporting of employees and contractors, and withholding and remitting of child support. Bidder will provide such certificate for each Subcontractor if it receives a Notice of Award. Bidders are encouraged to obtain such Certificate of Good Standing online at <https://mtc.dor.state.ma.us/mtc/> / See explanation and instructions at the end of this Section.
- C. **Debarment:** A Bidder is ineligible to bid or enter into a public contract in the Commonwealth of Massachusetts if it has been debarred from bidding on or entering into a public contract under the provisions of MGL Chapter 29, Section 29F, *Debarment from bidding; definitions; lists; notice; affiliates; mitigating circumstances*, or any other applicable debarment provisions of any other chapter of the MGL or any rule or regulations promulgated thereunder.
- D. **Financial Statements:** The following shall be submitted prior to execution of the Agreement in accordance with MGL Chapter 30, Section 39R *Definitions; contract provisions; management and financial statements; enforcement*, as requested in the Notice of Award issued to the Successful Bidder.
- To Owner - A statement by management on internal accounting control and a statement prepared by an independent certified public accountant regarding management's statement.
- E. **Labor Preferences and Work Hours**
1. The provisions of MGL Chapter 149, Section 26, *Public works; preference to veterans and citizens; wages*, requires that employment in the construction of public works be subject to preference being given to citizens of the Commonwealth of Massachusetts, citizens of the town or city where the Project is located, veterans and service-disabled veterans, and citizens of the United States. The provisions of MGL Chapter 149, Section 179A, *Preference to citizens in awarding public work contracts, violations*, requires that award of contracts for public work be subject to preference being given to persons who are citizens of the United States.
 2. The provisions of MGL Chapter 149, Sections 26, 27, and 27A through 27D, as amended, set forth requirements for minimum wage rates as issued by the Executive Office of Labor and Workforce Development, Department of Labor Standards. It is the responsibility of the Bidders, before Bid opening, to request, if necessary, any additional information on Minimum Wage Rates for those trades people who may be employed for the proposed Work under the resulting Contract. Also see Sections 00 73 43 and 00 73 46 of the Supplementary Conditions.
 3. The provisions of MGL Chapter 149, Section 30, *Eight hour day and six day week; emergencies; work on highways*, and Section 34, *Public contracts; stipulation as to hours and days of work; void contracts*, apply to this Project.
- F. **Sales Tax Exemption:** MGL Chapter 64H, Section 6, *Exemptions*, subsection (f), exempts building materials and supplies to be used in the Project from Commonwealth of Massachusetts sales tax and Bidder shall not include any amount therefor. The words “building materials and supplies” shall include all materials and supplies consumed, employed, or expended in the

construction, reconstruction, alteration, remodeling or repair of any building, structure, public highway, bridge, or other such public work, as well as such materials and supplies physically incorporated therein. Said words shall also include rental charges for construction vehicles, equipment and machinery rented specifically for use on the Project Site, or while being used exclusively for the transportation of materials for the Project.

- G. **Safety and Health:** This Project is subject to Massachusetts Department of Labor and Industries, Division of Occupational Safety 454 CMR 10.00 et seq. "*Construction Industry Rules and Regulations*"; Massachusetts Department of Public Safety 520 CMR 14.00 et seq. "*Excavation and Trench Safety*"; MGL Chapter 82, *The Laying Out, Alteration, Relocation and Discontinuance Of Public Ways and Specific Repairs Thereon*; MGL Chapter 82A, *Excavation and Trench Safety*, and MGL Chapter 149 Section 129A, *Shoring Trenches for local governments*. Also see Section 00 73 19 of the Supplementary Conditions.

H. **Labor Preferences and Work Hours**

1. Work involving the removal, containment, or encapsulation of asbestos or material containing asbestos must be performed by a contractor licensed in accordance with MGL Chapter 149, Section 6B.
 2. Sheet metal work must be performed by a contractor licensed in accordance with 271 CMR 1.00, et seq. governing licensing, permitting, and sheet metal work in Massachusetts.
- I. **Price Adjustments for Certain Materials:** As required by Chapter 150 of the Acts of 2013, the provisions of MGL Chapter 30, Section 38A, *Price adjustment clause in contracts for road, bridge, water and sewer projects awarded under Sec. 39M*, adjustments for fuel (both diesel and gasoline), liquid asphalt and Portland cement shall be made as set forth in Section 00 73 73, SC-12.01.

END OF SECTION

SECTION 00 31 00

AVAILABLE PROJECT INFORMATION

INFORMATION	LOCATION OF INFORMATION
Improvements Order of Conditions	Specifications 00 31 00a
2024 Utility Improvement Plans	Separate PDF Document
MassDOT Standard Contractual & Technical Specifications / Details	https://www.mass.gov/massdot-highway-division-manuals-and-publications
MassDOT Construction Permits	Specifications 00 31 00b

END OF SECTION

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APPENDICES

00 31 00a	Mill, Forest Street and School Street Improvements Order of Conditions
00 31 00b	MassDOT Construction Permits

00 31 00a –Improvements Order of Conditions

00 31 00b – MassDOT Construction Permits

SECTION 00 41 01

BID FORM

ARTICLE 1 – DEFINED TERMS

- 1.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions and Supplementary Conditions, if any.

ARTICLE 2 – BID RECIPIENT

- 2.01 This Bid is submitted to:

Manchester-By-The-Sea
10 Central Street, Room 6
Manchester-By-The-Sea, Massachusetts 01944
ATTN: Charles Dam, Public Works Director

- 2.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 3 – BIDDER'S ACKNOWLEDGEMENTS

- 3.01 Bidder accepts all the terms and conditions of the Bidding Documents including, without limitation:
- A. those dealing with disposition of Bid security;
 - B. those included in the Supplementary Instructions to Bidders;
 - C. insurance and bonding requirements (Payment Bond and Performance Bond each equal to 100% of the total Contract Price) set forth in the General Conditions and Supplementary Conditions, if any;
 - D. Contractor to fully comply with all provisions of MassDOT Standard Specifications for Highways and Bridges, including but not limited to Section 4:00 SCOPE OF WORK.
 - E. Contract Times as set forth in the Agreement; and
 - F. provisions for liquidated damages as set forth in the Agreement.
- 3.02 This Bid will remain subject to acceptance for 150 calendar days after the Bid opening or for such longer period of time that Bidder may agree to in writing upon request of Owner.

3.03 Bidder acknowledges receipt of the following Addenda:

Addendum No. Addendum Date

3.04 Bidder acknowledges the representations and certifications included in Section 00 45 05 are made a condition of the Bid.

ARTICLE 4 – BASIS OF BID

4.01 Bidder will complete the Work under Work Authorizations in accordance with the Contract Documents for the following price(s) based on unit prices included in the following schedule. Bidder must complete all items. BID PRICES SHALL EXCLUDE SALES AND USE TAX.

Base Bid Price Form Mill, Forest and School Street Utilities Improvements

Item No.	Item Description with Unit or Lump Sum Price in Written Words	Estimated Quantity & Unit	Unit Bid Price (Figures)	Total Bid Item Price (Figures)
1	Mobilization/Demobilization @	1		
		LS		
	Dollars and _____ Cents PER LUMP SUM			
2a	4" Cement Lined Ductile Iron Pipe @	20		
		LF		
	Dollars and _____ Cents PER LINEAR FOOT			
2b	6" Cement Lined Ductile Iron Pipe @	120		
		LF		
	Dollars and _____ Cents PER LINEAR FOOT			
2c	8" Cement Lined Ductile Iron Pipe @	1500		
		LF		
	Dollars and _____ Cents PER LINEAR FOOT			

Item No.	Item Description with Unit or Lump Sum Price in Written Words	Estimated Quantity & Unit	Unit Bid Price (Figures)	Total Bid Item Price (Figures)
2d	12" Cement Lined Ductile Iron Pipe @	3100		
		LF		
	Dollars and _____ Cents PER LINEAR FOOT			
3	1" Copper Tubing @	850		
		LF		
	Dollars and _____ Cents PER LINEAR FOOT			
4	1" Corporation @	30		
		EA		
	Dollars and _____ Cents PER EACH			
5	1" Curb Stop & Box @	30		
		EA		
	Dollars and _____ Cents PER EACH			
6a	4" Gate Valve & Box @	1		
		EA		
	Dollars and _____ Cents PER EACH			
6b	6" Gate Valve & Box @	8		
		EA		
	Dollars and _____ Cents PER EACH			
6c	8" Gate Valve & Box @	6		
		EA		
	Dollars and _____ Cents PER EACH			
6d	12" Gate Valve & Box @	5		
		EA		
	Dollars and _____ Cents PER EACH			

Item No.	Item Description with Unit or Lump Sum Price in Written Words	Estimated Quantity & Unit	Unit Bid Price (Figures)	Total Bid Item Price (Figures)
7	Hydrants @	5		
		EA		
	Dollars and _____ Cents PER EACH			
8	Fittings @	4,300		
		LBS		
	Dollars and _____ Cents PER POUNDS			
9	Water Distribution Bypass @	1		
		LS		
	Dollars and _____ Cents PER LUMP SUM			
10a	4' Diameter Air Release Manhole @	1		
		EA		
	Dollars and _____ Cents PER EACH			
10b	4' Diameter Cleanout Manhole @	3		
		EA		
	Dollars and _____ Cents PER EACH			
11	Test Pits @	5		
		EA		
	Dollars and _____ Cents PER EACH			
12	12" SDR-35 PVC Drain Pipe @	100		
		LF		
	Dollars and _____ Cents PER EACH			
13	Sewer Frame & Cover @	4		
		EA		
	Dollars and _____ Cents PER EACH			

Item No.	Item Description with Unit or Lump Sum Price in Written Words	Estimated Quantity & Unit	Unit Bid Price (Figures)	Total Bid Item Price (Figures)
14a	4" C900 Force main @	3100		
		LF		
	Dollars and _____ Cents PER LINEAR FOOT			
14b	4" HDPE Welded Force main	280		
		LF		
	Dollars and _____ Cents PER LINEAR FOOT			
15	1.25" Force main (Service) @	200		
		LF		
	Dollars and _____ Cents PER EACH			
16	Sewer Corporation Valve and box @	9		
		EA		
	Dollars and _____ Cents PER EACH			
17	4" Gate Valve (Sewer)	3		
		EA		
	Dollars and _____ Cents PER EACH			
18	Connect to Existing Sewer Manhole @	1		
		EA		
	Dollars and _____ Cents PER EACH			
19a	Temporary Trench Pavement (4") @	950		
		TON		
	Dollars and _____ Cents PER TON			
19b	Misc. Hot Mix Asphalt @	60		
		TON		
	Dollars and _____ Cents PER TON			

Item No.	Item Description with Unit or Lump Sum Price in Written Words	Estimated Quantity & Unit	Unit Bid Price (Figures)	Total Bid Item Price (Figures)
20	Permanent Roadway Mill & Overlay Top Course – 2” @	20500		
		SY		
	Dollars and _____ Cents PER SQUARE YARD			
21a	Rock Removal @ One Hundred	250	\$100	\$25,000
		CY		
	Dollars and _00_ Cents PER CUBIC YARD			
21b	Rock Removal Adjusted @	250		
		CY		
	Dollars and _____ Cents PER CUBIC YARD			
22	Erosion Control @	1		
		LS		
	Dollars and _____ Cents PER LUMP SUM			
23	Concrete Encasement @	500		
		LF		
	Dollars and _____ Cents PER LINEAR FOOT			
24	Loam and Seed @	100		
		SY		
	Dollars and _____ Cents PER SQUARE YARD			
25	Project Closeout @	1		
		LS		
	Dollars and _____ Cents PER LUMP SUM			
26	Traffic Management @	1		
		LS		
	Dollars and _____ Cents PER LUMP SUM			

Item No.	Item Description with Unit or Lump Sum Price in Written Words	Estimated Quantity & Unit	Unit Bid Price (Figures)	Total Bid Item Price (Figures)
27	Owner's Allowance for Police Detail @ THIRTY-FIVE THOUSAND	1	\$35,000	\$35,000
		ALL		
	Dollars and _____ Cents PER ALLOWANCE			

TOTAL MILL, FOREST and SCHOOL STREET BASE BID PRICE (based on Unit Price Schedule Above):

-
- 4.02 Unit Prices have been computed in accordance with Paragraph 11.03.A of the General Conditions and Supplementary Conditions, if any.
- 4.03 Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for unit price items will be based on actual quantities determined and based on the unit prices included above, as provided in the General Conditions and Supplementary Conditions, if any.
- 4.04 Contract Price Adjustments:
- A. Owner's Contingency Allowance items will be processed per Article 11.02 of the General Conditions.
1. Base Prices for diesel fuel, gasoline, liquid asphalt, and portland cement in cast-in-place concrete to be used for Contract Price Adjustments are established in Section 00 73 73, SC-12.01 per MGL c30s38A.

ARTICLE 5 – TIME OF COMPLETION

- 5.01 Bidder agrees to the Contract Times (Substantial Completion and ready for final payment) as stated in the Agreement.
- 5.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 6 – ATTACHMENTS TO THIS BID

- 6.01 The following documents are submitted with and made a condition of this Bid:

00 43 13 Bid Bond – Penal Sum Form
OR
Required Bid security in the form of 5% pf the Bidders Base Price

Supplements:

00 43 93 Bid Submittal Checklist
00 45 05 Bidder's Representations and Certifications including required submittals
00 45 13 Bidder's Qualifications
00 45 19 Non-collusion Affidavit

ARTICLE 7 – BID SUBMITTAL

7.01 This Bid is submitted by: _____

Fill out **ONE** of the following sections A, B, C or D as appropriate.

A. Corporation

Corporation Name: _____

State of incorporation: _____

Type: _____
(General Business, Professional, Service, other)

By: _____
(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest: _____

Business Address: _____

Phone & Facsimile Nos: _____

Email address: _____

Date of qualification to do business as out-of-state corporation: _____

B. Limited Liability Company (LLC)

LLC Name: _____

State in which organized: _____

By: _____
(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business Address: _____

Phone & Facsimile Nos: _____

Email address: _____

C. Joint Venture

First Joint Venturer Name:

By: _____
(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business Address: _____

Phone & Facsimile Nos: _____

Email address: _____

Second Joint Venturer Name:

By: _____
(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business Address: _____

Phone & Facsimile Nos: _____

Email address: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, corporation, and limited liability company that is a party to the joint venture should be in the manner indicated above.)

Phone & Facsimile Nos: _____

Email address: _____

D. An Individual

Name (*typed or printed*): _____

By: _____
(*Individual's signature*)

Doing Business As: _____

Business Address: _____

Phone & Facsimile Nos: _____

Email address: _____

SUBMITTED ON: _____

EIN/FEIN: _____

Communications concerning this Bid shall be addressed to:

Name: _____

Title: _____

Business Address: _____

Phone & Facsimile Nos: _____

Email address: _____

END OF SECTION

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name and Address of Principal Place of Business*):

OWNER (*Name and Address*):

BID

Bid Due Date:

Description (*Project Name and Include Location*):

BOND

Bond Number:

Date (*Not earlier than Bid due date*):

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

By:

Signature

Print Name

Title

Attest:

Signature

Title

By:

Signature (Attach Power of Attorney)

Print Name

Title

Attest:

Signature

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

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 shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur 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 shall 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 shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall 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 Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall 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 Registered or Certified Mail, return receipt requested, postage pre-paid, and shall 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 shall 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 shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00 43 93

BID SUBMITTAL CHECKLIST

Bidder confirms that the following documents are fully completed, included in and made part of its Bid.

- ☐ 00 41 01 Bid Form
- ☐ 00 43 13 Bid Bond – Penal Sum Form
OR
- ☐ Required Bid security in the form of _____

Supplements

- ☐ 00 44 05 Bidder's Representations and Certifications
 - ☐ **Including documents and submittals**
- ☐ 00 45 19 Non-collusion Affidavit
- ☐ One original signed hardcopy (with original Bid security) has been submitted to the Owner in accordance with Section 00 21 13

CONFIRMED BY BIDDER ON:

By: _____

Authorized person per Bid Form

END OF SECTION

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SECTION 00 45 05

BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

The undersigned, under the penalties of perjury, represents and certifies the following which is made a condition of the Bid.

1.01 Bidder's Representations

- A. Bidder has examined and carefully studied the Bidding Documents and other related data identified in the Bidding Documents.
- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Section 00 73 10 of the Supplementary Conditions Paragraph 4.02 as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Section 00 73 10 of the Supplementary Conditions Paragraph 4.06 as containing reliable "technical data."
- E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of the Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which the Bid is submitted.

1.02 Bidder's Certifications

- A. The Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid and has not solicited or induced any individual or entity to refrain from bidding.
- C. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish Bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 - 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.
- D. Bidder will comply with the requirements of the Safety and Health provisions in the Contract Documents, and if Bidder is awarded a Contract, it shall incorporate these provisions into all subcontracts and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier.
- E. Bidder will comply with the requirements of the Equal Employment Opportunity, Anti-discrimination, and Affirmative Action Program provisions in the Contract Documents, if any, and if Bidder is awarded a Contract, it shall incorporate these provisions into all subcontracts and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier.

1.03 Bidder's Certifications Required by Massachusetts General Law (MGL)

- A. The Bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.
- B. Bidder has submitted a certificate from the Secretary of State of the Commonwealth of Massachusetts that the corporation has complied with requirements of Section 15.03 of subdivision A of Part 15 of MGL Chapter 156D and the date of compliance, and further has filed all annual reports required by Section 16.22 of subdivision B of Part 16 of said Chapter 156D if Bidder is a foreign corporation. Bidder certifies it will provide such certificate for each Subcontractor that is a foreign corporation if it receives a Notice of Award.

- C. Bidder certifies, under the penalties of perjury, to the best of its knowledge and belief, that all state tax returns have been filed and all state taxes paid pursuant to MGL Chapter 62C, Section 49A, and has submitted a Certificate of Good Standing with respect to all returns due and taxes from the Commonwealth of Massachusetts Department of Revenue certifying Bidder has complied with all laws relating to taxes, reporting of employees and contractors, and withholding and remitting of child support. Bidder certifies it will provide such certificate for each Subcontractor if it receives a Notice of Award.
- D. Bidder certifies that if awarded the Contract, the following will be submitted prior to execution of the Agreement in accordance with MGL Chapter 30, Section 39R *Definitions; contract provisions; management and financial statements; enforcement*.
- To Owner - A statement by management on internal accounting control and a statement prepared by an independent certified public accountant regarding management's statement;
- E. Bidder certifies that if awarded the Contract, any Work involving the removal, containment, or encapsulation of asbestos or material containing asbestos will only be performed by a licensed contractor in accordance with MGL Chapter 149, Section 6BA.
- F. Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work and further certifies that all employees to be employed at the Work Site 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 if Bidder is awarded a Contract, shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.
- G. Bidder is not presently debarred from bidding on or entering into a public contract in the Commonwealth of Massachusetts under the provisions of MGL Chapter 29, Section 29F, or any other applicable debarment provisions of any other chapter of the MGL or any rule or regulations promulgated thereunder; and is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.

SUBMITTED ON: _____

By: _____

END OF SECTION

SECTION 00 45 13

BIDDER'S QUALIFICATIONS

1. Bidders may be investigated by the OWNER to determine if they are qualified to perform the Work.
 - A. Any Bidder who cannot meet all of the following requirements may be rejected at the discretion of the OWNER. The bidder:
 - a. Shall not have defaulted on any contract within three years prior to the bid date.
 - b. Shall maintain a permanent place of business.
 - c. Shall have adequate personnel and equipment to perform the work expeditiously.
 - d. Shall have suitable financial status to meet obligations incident to the work.
 - e. Shall have appropriate technical experience satisfactory to OWNER in the class of work involved.
 - f. Shall be registered with the Secretary of State of the Commonwealth of Massachusetts to do business in Massachusetts.
 - g. Shall not have failed to perform satisfactorily on contracts of a similar nature.
 - h. Shall not have failed to complete previous contracts on time.
 - i. Shall not have any documented disputes or outstanding deficient work with the Town of Manchester-By-The-Sea on any prior projects.
 - j. In business for 10 years at a minimum.
2. To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit, within five days after the Bid opening, a list of all work completed within the last five years.
3. The investigation of a Bidder will seek to determine whether the organization is adequate in size, is authorized to do business in the jurisdiction where the project is located, has had previous experience in the type of work in this Contract, and whether available equipment and financial resources are adequate to assure OWNER that the Work will be completed in accordance with the terms of the Agreement. The amount of other work to which the Bidder is committed may also be considered.
4. In evaluating Bids, OWNER will consider the qualifications of only those Bidders whose Bids are in compliance with the prescribed requirements.
5. OWNER reserves the right to reject any Bid if the evidence submitted by, or the investigation of, such Bidder fails to satisfy OWNER that such Bidder is properly qualified to carry out the obligations of the Contract Documents and to complete the Work contemplated therein.

- A. Following is a list of **at least five (5) projects** Bidder's organization has completed **within the last ten (10) years which are similar** in type, character and magnitude to that required by the Contract. Projects similar in type, character and magnitude shall include:
- Installation of CLDI water main of at least 4,000 Linear Feet;
 - Contract municipal project value at a minimum of \$2,000,000.

Client/OWNER Name/Address	Project Name/Location/Total Price	CURRENT Contact Name, Phone, Email	Diameter/Length/ Material of Lined Pipes	Time Period

END OF SECTION

SECTION 00 45 19

NON-COLLUSION AFFADAVIT

_____, being duly sworn, depose
and, under the penalty of perjury, say that the following is true:

1. I am the person responsible within my firm for the final decision as to the price(s) and amount of this Bid or, if not, that I have written authorization, enclosed herewith, from that person to make the statements set out below on his or her behalf and on the behalf of my firm.
2. The price(s) and amount of this Bid have been arrived at independently, without collusion, consultation, communication, or agreement for the purpose of restricting competition with any other contractor, competitor, Bidder, or potential Bidder.
3. Unless otherwise required by law, neither the price(s) nor the amount of this Bid have been disclosed to any other firm or person who is a Bidder, competitor, or potential Bidder on the Project, and will not be so disclosed either directly or indirectly prior to Bid opening.
4. No attempt has been made or will be made to solicit, cause, or induce any firm, partnership, corporation, or person to submit or not submit a Bid on this Project, or to submit a Bid higher than the Bid of this firm, or submit an intentionally high or noncompetitive Bid or other form of complementary Bid, or for the purpose of restricting competition.
5. The Bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary Bid.
6. My firm has not offered or entered into a subcontracting agreement regarding the purchase of materials or services from any firm or person, or offered, promised, or paid cash or anything of value to any firm or person, whether in connection with this or any other Project, in consideration for an agreement or promise by any firm or person to refrain from proposing or to submit a complementary Bid on the Project.
7. My firm has not accepted nor been promised any subcontract or agreement regarding the sale of materials or services to any firm or person and, has not been promised or paid cash or anything of value to any firm or person, whether in connection with this or any other project, in consideration for my firm's submitting a complementary Bid or agreeing to do so, on the Project.
8. I have made a diligent inquiry of all members, officers, employees, and agents of my firm with responsibilities relating to the preparation, approval, or submission of my firm's Bid on the Project and have been advised by each of them that he or she has not participated in any communication, consultation, discussion, agreement, collusion, act, or other conduct inconsistent with any of the statements and representations made in this affidavit.

Company Name: _____

Signature: _____

Company Position: _____

Attest: _____

Date: _____

END OF SECTION

SAMPLE NOTICE OF AWARD

Engineer's Project No.:

1. Deliver the Contract security (Bonds) as specified in the General Conditions and Supplementary Conditions (Articles 2 and 5);
2. Deliver the insurance certificates indicating coverages as specified in the General Conditions and Supplementary Conditions (Articles 2 and 5);
3. Deliver the following completed and executed certifications and documents:
 - a. Pursuant to MGL Chapter 30, Section 39R *Definitions; contract provisions; management and financial statements; enforcement* per Section 00 22 13:
 - Provide a statement by management on internal accounting controls and a statement prepared by an independent certified public accountant regarding management's statement to the Owner.
 - b. From each Subcontractor:
 - Certificate of Good Standing from the Department of Revenue with respect to all returns due and taxes per Section 00 22 13
 - Certification from the Secretary of State for foreign corporations per Section 00 22 13

Other Conditions precedent:

Failure to comply with the above conditions within the time specified will entitle the Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

After confirming that you have complied with the above conditions and required approvals are obtained, Owner will deliver the conformed Contract Documents for execution.

By: Owner: _____

Authorized Signature _____

Title: _____

Copy to Engineer

END OF SECTION

SECTION 00 52 10

AGREEMENT FORM

Manchester-By-The-Sea, MA
STANDARD CONTRACT

THIS AGREEMENT is by and between the Town of Manchester-By-The-Sea, Massachusetts ("Owner") and _____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Scope of Work includes the following principal features and all materials, equipment, services and construction inherent to the Work.

- Installation of CLDI water main on School and Forest Streets;
- Installation of new hydrants & connections to existing water system;
- Installation of new water service connections;
- Installation of sewer force main on Mill and Forest Streets;
- Installation of sewer services
- Furnish, install, maintain and removal of temporary water main bypass;
- Permanent right-of-way and trench restoration in areas noted on the Drawings.

ARTICLE 2 – THE PROJECT

2.01 The Project under the Contract Documents is generally described as "2024 Mill, Forest and School Street Utility Improvement Project."

ARTICLE 3 - ENGINEER

3.01 The Project has been designed by Hancock Associates (Engineer) which is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

- A. All time limits for Milestones, if any, Substantial Completion, Final Completion Punchlist completion and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Substantial Completion, Punchlist Completion, and Final Payment*

- A. The Bid Work shall be substantially complete within 120 calendar days and shall reach final completion within 150 calendar days of the Notice to Proceed in accordance with Paragraph 14.07 of the Standard General and Supplementary Conditions with the exception of the work included in Section 4.02 B.
- B. The Post Substantial Completion Punchlist shall be complete in accordance with Paragraph 14.07 of the Standard General and Supplementary Conditions.

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the Standard General and Supplementary Conditions, and Additional Supplementary Conditions, if any. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner as follows.
 - 1. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work (Final Completion Punchlist) within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$1,500 for each calendar day that expires after the time specified in Paragraph 4.02 above.

5.02 *Adjustments to the Contract Price*

- A. Adjustments to the Contract Price will be made for diesel fuel, gasoline, liquid asphalt, and portland cement in cast-in-place concrete based on the Base Prices and index established for adjustments in accordance with price adjustment clauses included in Section 00 73 73, SC-12.01.
- B. Adjustments to the Contract Duration (deduction) will be made for each full day of approved hours worked outside the specified allowable Work hours in Section 00 73 10 to cover additional costs incurred by the Owner such as for Engineer and Resident Site Representative ("Additional Work Fee"). Any Work conducted by the Contractor outside of the specified allowable Work hours will be tracked and totaled. For each 8-hours worked outside the allowable work hours will equate to a one-day deduction from the Contract Duration.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the Standard General Conditions and Supplementary Conditions, if any. Applications for Payment will be processed by Engineer as provided in the Standard General Conditions and Supplementary Conditions, if any, and the General Requirements.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment within 30 days of acceptance/approval of payment requisitions during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the Standard General Conditions and Supplementary Conditions, if any, (and in the case of Unit Price Work based on the number of units completed).
 - 1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the Standard General Conditions and Supplementary Conditions, if any, and additional retainage allowed by Laws and Regulations.
 - a. Progress Payments of 95 percent for Work completed (with the balance of 5 percent being retainage); and
 - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance of 5 percent being retainage).
 - 2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 99 percent of the Work completed (with the balance of 1 percent being retainage), less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and Supplementary Conditions, if any, and less the Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected (Punch List) attached to the certificate of Substantial Completion and subject to Paragraph 14.04 of the General Conditions and Supplementary Conditions, if any.

However, retainage for items planted in the ground shall remain at 5 percent of the cost of such items until Final Payment per Massachusetts General Laws Chapter 30, Section 39G.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General and Supplementary Conditions, if any, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 – INTEREST

- 7.01 All moneys not paid when due as provided in Article 14 of the General and Supplementary Conditions, if any, shall bear interest at the rate 3 percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston per Massachusetts General Laws Chapter 30, Section 39G. Interest shall not be accrued on retainage.

ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS AND CERTIFICATIONS

- 8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:
 - A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
 - B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
 - D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
 - E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.
 - F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

8.02 The Contractor certifies, under the penalties of perjury, that:

- A. Contractor has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.
- B. Contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting of child support and, has provided for itself and each Subcontractor, a Certificate of Good Standing from the Department of Revenue with respect to all returns due and taxes and further, certifies that, to the best of its knowledge and belief, all state tax returns have been filed and all state taxes have been paid as required by Law pursuant to Massachusetts General Laws Chapter 62C, Section 49A;
- C. If a foreign corporation, Contractor has provided for itself and each Subcontractor that is a foreign corporation, a certificate of the state secretary stating that the corporation has complied with requirements of Massachusetts General Laws Chapter 156D, Part 15, Section 15.03 of subdivision A and the date of compliance, and further has filed all annual reports required by Section 16.22 of subdivision B of Part 16 of said Chapter 156D, pursuant to Massachusetts General Laws Chapter 30, Section 39L;

- D. Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work and further certifies that all employees to be employed at the Work Site 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 shall furnish documentation of successful completion of said course with the first certified payroll report for each employee, all as required by Massachusetts General Laws Chapter 30, Section 39S;
- E. Contractor is not presently debarred from entering a public contract Commonwealth of Massachusetts under the provisions of Massachusetts General Laws Chapter 29, Section 29F, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulations promulgated thereunder; and is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- F. Pursuant to Massachusetts General Laws Chapter 30, Section 39R, Contractor has provided a statement by management on internal accounting controls, a statement prepared by an independent certified public accountant regarding management's statement, and an audited financial statement for the most recent completed fiscal year;
- G. Contractor will incorporate the applicable provisions of the Contract Documents into all subcontracts and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier.

ARTICLE 9 – CONTENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
 - 1. This Agreement and attachments
 - 2. Items listed in Section 00 54 00
 - 3. Forms listed in 00 60 00
 - 4. Standard General Conditions in Section 00 72 05
 - 5. Supplementary Conditions listed in Section 00 73 05
 - 6. General Requirements, Specifications and Drawings as listed in the table of contents of the Contract Documents

7. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed
 - b. Work Change Directives
 - c. Change Orders
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement and made a part hereof.
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the Standard General Conditions and Supplementary Conditions, if any.

ARTICLE 10 – MISCELLANEOUS

10.01 Terms

- A. Terms used in this Agreement will have the meanings stated in the Standard General Conditions and Supplementary Conditions, if any.
- B. Contractor shall comply with Massachusetts Department of Transportation Standard Specifications for Highways and Bridges in their entirety including contractual and technical requirements.

10.02 Assignment of Contract

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

10.03 Successors and Assigns

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

10.04 Severability

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

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective on _____ (which is the Effective Date of the Agreement).

OWNER: _____
MANCHESTER-BY-THE-SEA, MA

CONTRACTOR: _____

By: _____

By: _____

Printed Name _____

Town Administrator

Title _____

Attest: _____

Attest: _____

Title _____

Title _____

Address for giving notices: _____

Address for giving notices: _____

Pursuant to MGL c.44, s31C, I certify that an appropriation has been made in the total amount of the Agreement.

Town/Accountant (Name) _____

Date: _____

The following items included in this Section are attached to and are incorporated into the Agreement and made a part thereof.

TO BE COMPLETED AFTER AWARD LISTING ITEMS FROM SUCCESSFUL BIDDER

- Performance Bond
- Payment Bond
- Insurance certificates

END OF SECTION

SECTION 00 54 00

AGREEMENT FORM SUPPLEMENTS

1.01 GENERAL

The following items supplement the Agreement Form (Section 00 52 10) and are incorporated into the Agreement and made a part thereof. Terms used in the Agreement will have the meanings stated in the Standard General Conditions and Supplementary Conditions, if any.

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

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

1.02 CONTRACT DOCUMENTS

The Contract Documents consist of the following which are attached to the Agreement and made a part thereof. There are no Contract Documents other than those listed below.

- The Agreement and attached Schedules
- Agreement Form Supplements (Section 00 54 00)
- Contract Forms (listed in Section 00 60 00)
- Standard General Conditions of the Construction Contract (Section 00 72 05)
- Supplementary Conditions (listed in Section 00 73 05)
- Specifications and Drawings as listed in the Table of Contents and Drawing List
- The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - Notice to Proceed
 - Work Change Directives
 - Change Orders

The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the Standard General Conditions and Supplementary Conditions, if any.

The Contract Documents may include certain provisions required by Laws and Regulations. The Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations. Where any requirements in the Contract Documents do not conform to or are inconsistent with such Laws and Regulations to which the Contract is subject or by which it is governed, such Laws and Regulations shall have precedence over any matters set forth herein. Where other conflicts exist, the more stringent requirement shall apply.

1.03 CONTRACTOR'S REPRESENTATIONS AND CERTIFICATIONS

A. In order to induce Owner to enter into the Agreement, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
2. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents, except as indicated for individual Work Authorizations.
5. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
6. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
7. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

B. The Contractor certifies, under the penalties of perjury, that:

1. Contractor has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph:
 - a. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 - b. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

- c. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non- competitive levels; and
 - d. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.
- 2. Contractor certifies no official or employee of the Owner has a financial interest in this Contract or in the expected profit to arise from the Contract, unless the Contractor and Owner, employee or official both have notified public authorities in writing, that the Contractor and the employee fully complied with the provisions of MGL Chapter 43, Section 27 *Interest In Public Contracts By Public Employees Prohibited; Penalty* and provisions of MGL Chapter 268A, Section 20 *Municipal Employees; Financial Interest In Contracts; Holding One Or More Elected Positions*;
 - 3. Contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting of child support and, has provided for itself and each Subcontractor, a Certificate of Good Standing from the Department of Revenue with respect to all returns due and taxes and further, and certifies that, to the best of its knowledge and belief, certifies all state tax returns have been filed and all state taxes have been paid as required by Law pursuant to Massachusetts General Laws Chapter 62C, Section 49A, as evidenced by execution of Schedule D to the Agreement;
 - 4. If a foreign corporation, Contractor has provided for itself and each Subcontractor, a certificate of the state secretary stating that the corporation has complied with requirements of Massachusetts General Laws Chapter 156D, Part 15, Section 15.03 of subdivision A and the date of compliance, and further has filed all annual reports required by Section 16.22 of subdivision B of Part 16 of said Chapter 156D, pursuant to Massachusetts General Laws Chapter 30, Section 39L;
 - 5. Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work and further certifies that all employees to be employed at the Work Site 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 shall furnish documentation of successful completion of said course with the first certified payroll report for each employee;
 - 6. Contractor is not presently debarred from entering into a public contract with the Commonwealth of Massachusetts under the provisions of Massachusetts General Laws Chapter 29, Section 29F, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulations promulgated thereunder; and is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency as evidenced by execution of Schedule E of the Agreement;

7. Pursuant to Massachusetts General Laws Chapter 30, Section 39R, Contractor has provided a statement by management on internal accounting controls, a statement prepared by an independent certified public accountant regarding management's statement; and an audited financial statement to DCAMM for the most recent completed fiscal year;
8. The Contractor shall not participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue code 1986, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws; and
9. Contractor will incorporate the applicable provisions of the Contract Documents into all subcontracts and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier.

1.04 ADDITIONAL REQUIREMENTS

- A. Interest: All moneys not paid when due as provided in Article 14 of the General Conditions and Supplementary Conditions, if any, shall bear interest at the rate 3 percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston per Massachusetts General Laws Chapter 30 Section 39R. Interest shall not be accrued on retainage.
- B. Contract is Public Record: The Contract is subject to MGL Chapter 66 et seq, Public Records, and as such, related submittals, purchase orders, related pricing documents, and invoices will be public documents, and may be available for public and private distribution, except as specifically excluded. The Contractor agrees to provide the Owner copies of any documents requested under this law at no charge to the Owner or the requestor.
- C. Laws and Dispute Resolution: Any actions arising out of the Agreement shall be brought and maintained in a State or Federal Court in Massachusetts which shall have exclusive jurisdiction thereof. The Owner may agree to voluntary mediation or arbitration of any contract dispute and will share the costs of such mediation or arbitration as set forth in the Standard General Conditions and Supplementary Conditions. No legal or equitable rights of the parties shall be limited by this paragraph.

1.05 ATTACHMENTS TO AGREEMENT

The following items included in this Section are attached to and are incorporated into the Agreement and made a part thereof.

- **Items submitted with Bid**
 - Bid
 - Bidder's Qualifications (00 45 13)
 - Payment Bond
 - Performance Bond
 - Insurance Certificates

- **Certifications**
 - Certificate from the Secretary of State for foreign corporations
 - An audited financial statement for the most recent completed fiscal year
 - A statement by management on internal accounting controls
 - Subcontractor certification from the Secretary of State for foreign corporations
 - Subcontractor Certificates of Good Standing from MA Department of Revenue with respect to all returns due and taxes

END OF SECTION

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PERFORMANCE BOND (Form C-006113.13)

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):*

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount:

Modifications to this Bond Form: None See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal (seal) Surety's Name and Corporate Seal (seal)

By: _____ By: _____
Signature Signature *(attach power of attorney)*

Print Name Print Name

Title Title

Attest: _____ Attest: _____
Signature Signature

Title Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

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 shall 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 shall 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 shall 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 shall 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 shall 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 shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall 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 shall not be reduced or set off on account of any such unrelated obligations. No right of action shall 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 may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall 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 shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

16. Modifications to this Bond are as follows:

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 shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

PAYMENT BOND (Form C-006113.16)

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):*

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount:

Modifications to this Bond Form: None See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal *(seal)* _____
Surety's Name and Corporate Seal *(seal)*

By: _____ By: _____
Signature Signature *(attach power of attorney)*

Print Name Print Name

Title Title

Attest: _____ Attest: _____
Signature Signature

Title Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

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 shall 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 shall 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 shall 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 shall 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 shall 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 shall 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 satisfy 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 shall 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 shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall 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:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
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;
4. A brief description of the labor, materials, or equipment furnished;
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;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
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

shall be 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 shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

0. Modifications to this Bond are as follows:

SAMPLE NOTICE TO PROCEED (C-00 55 00)

Date:

Project:

Owner:

Owner's Contract No.:

Contract:

Engineer's Project No.:

Contractor:

Contractor's Address: [send Certified Mail, Return Receipt Requested]

You are notified that the Contract Times under the above Contract will commence to run on . On or before that date, you are to start performing your obligations under the Contract Documents * for the following portion(s) of the Work:

Describe the limits of the Work covered

*A Notice to Proceed for the remaining Work will follow. *

In accordance with Article 4 of the Agreement, the date of Substantial Completion is , and the date of readiness for final payment is [OR the number of days to achieve Substantial Completion is , and the number of days to achieve readiness for final payment is].

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions, and Supplementary Conditions if any, provide that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

SAMPLE NOTICE TO PROCEED (C-00 55 00)

Also, before you may start any Work at the Site, you must:
[add other requirements].

Owner

Given by:

Authorized Signature

Title

Date

Copy to Engineer

SECTION 00 60 00

PROJECT FORMS

The following forms are included in this Section and shall be used for the Project as specified in the General Conditions and Supplementary Conditions if any, and the General Requirements. Completed and execution versions of these forms used during the Project shall be incorporated into the Agreement and made a part thereof.

Application for Payment Form (C-00 62 76)
Request for Interpretation/Information Form (C-00 63 15)
Field Order Form (C-00 63 36)
Work Change Directive Form (C-00 63 49)
Change Request Form (C- 00 63 60)
Change Order Form (C-00 63 63 MA)
Notice of Substantial Completion Form (C-00 65 15)
Certificate of Substantial Completion Form (C-00 65 16)
Notice of Completion Form (C-00 65 18)

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE	Application Period:	Application Date:
To	From (Contractor):	Via (Engineer):
(Owner):		
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

Application For Payment

Change Order Summary

Approved Change Orders			1. ORIGINAL CONTRACT PRICE..... .. \$
Number	Additions	Deductions	2. Net change by Change Orders..... .. \$
			3. Current Contract Price (Line 1 ± 2)..... .. \$
			4. TOTAL COMPLETED AND STORED TO DATE
			(Column F on Progress Estimate) \$..
			5. RETAINAGE:
			a. X _____ Work Completed\$
			b. X _____ Stored Material\$
			. Total Retainage (Line 5a + Line 5b)..... .. \$
			6. AMOUNT ELIGIBLE TO DATE (Line 4 -Line 5c) \$..
			7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application) \$
			8. AMOUNT DUE THIS APPLICATION..... .. \$..
			9. BALANCE TO FINISH, PLUS RETAINAGE
			(Column G on Progress Estimate + Line 5 above) \$..
TOTALS			
NET CHANGE BY			
CHANGE ORDERS			

Contractor's Certification

The undersigned Contractor certifies that to the best of its knowledge: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

By:	Date:
-----	-------

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is recommended by: _____ (Engineer) _____ (Date)

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is approved by: _____ (Owner) _____ (Date)

Approved by: _____
Funding Agency (if applicable) (Date)

Approved by: _____

Progress Estimate - Lump Sum Work FORM C-00 62 76

Contractor's Application

[illegible]

Progress Estimate - Unit Price Work

FORM C-00 62 76

Contractor's Application

For (Contract):						Application Number:				
Application Period:						Application Date:				
A			B	B(2)	C	D	E	F		
Item			Unit Price	Bid Item Value (\$)	Estimated Quantity Installed To Date <i>(Include This Month)</i>	Value of Work Installed to Date	Materials Presently Stored (not in C)	Total Completed and Stored to Date (D + E)	% (F / B)	Balance to Finish (B - F)
Bid Item No.	Description	Bid Item Quantity								
mobilize										
Totals										

Stored Material Summary FORM C-00 62 76

Contractor's Application

[illegible]

**REQUEST FOR
INTERPRETATION/INFORMATION
(Form C-00 63 15)**

RFI #: _____ ☐ **Attachment**

To: _____

From: _____

Attn: _____

Issue Date: _____

Project: _____

Required Reply Date: _____

DISTRIBUTION:

Contractor

Owner

Engineer

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

REFERENCES:

- **Specifications:** _____ **Section:** _____ **Page/Paragraph:** _____
- **Drawings:** **Issue Date:** _____ **Detail/Sections:** _____
- **Work Area:** _____ **Grid/Level:** _____

RFI DESCRIPTION:

From: _____

Tel No: _____ **Fax: No:** _____

Initial: _____

E-mail: _____

RFI REPLY:

Possible Cost Effect Yes: ☐ **NO:** ☐

Possible Schedule Effect Yes: ☐ **No:** ☐

From: _____ **Reply Date:** _____ **xc:** _____

Initial: _____

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Field Order (C-00 63 36)

No. _____

Date of Issuance: _____ Effective Date: _____

Project: _____ Owner: _____ Owner's Contract No.: _____

Contract: _____ Date of Contract: _____

Contractor: _____ Engineer's Project No.: _____

Attention:

You are hereby directed to promptly execute this Field Order issued in accordance with General Conditions Paragraph 9.04.A, for minor changes in the Work without changes in Contract Price or Contract Times. If you consider that a change in Contract Price or Contract Times is required, please notify the Engineer immediately and before proceeding with this Work.

Reference: _____
(Specification Section(s)) (Drawing(s) / Detail(s))

Description:

Attachments: _____

_____	Engineer: _____
_____	_____

Receipt Acknowledged by Contractor:

Date:

Copy to Owner

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Work Change Directive (Form C-00 63 49)

No. _____

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:	Date of Contract:	
Contractor:	Engineer's Project No.:	

Contractor is directed to proceed promptly with the following change(s):

Item No.	Description

Attachments (list documents supporting change):

Purpose for Work Change Directive:

Authorization for Work described herein to proceed on the basis of Cost of the

☐ Work due to: Nonagreement on pricing of proposed change.

☐ Necessity to expedite Work described herein prior to agreeing to changes on Contract Price and Contract Time.

Estimated change in Contract Price and Contract Times:

Contract Price \$ _____ (increase/decrease) Contract Time _____ (increase/decrease)
days

Recommended for Approval by Engineer:	Date
Authorized for Owner by:	Date
Received for Contractor by:	Date
Received by Funding Agency (if applicable):	Date:

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CHANGE REQUEST (FORM C-00 63 60)
(Design Changes/Deviations/Substitutions)

CR NO.
DATE

Project:

Request Initiated by:
☐ Contractor
☐ Owner
☐ Engineer

Impact to Contract Price expected ☐
Impact to Contract Time expected ☐
Change Orders will be processed separately

Request submitted as (format):

Description of Change (documentation attached)

Reason for Change

Response: This constitutes a Written Amendment to the Agreement.

Review of the proposed change/deviation/substitution by Engineer is for general compatibility with the design concept of the Project. This review does not extend to means, methods, sequences, or procedures of construction or to issues of safety incident thereto. This review shall not relieve the Contractor from responsibility for full compliance with the requirements specified and to determine and verify the information contained therein.

<div>Recommended By Engineer for Acceptance (subject to above comments if any) <input type="checkbox"/> recommended for processing and approval under separate Change Order NAME: <div>SignatureDate</div></div>	<div><input type="checkbox"/> Approved by Owner (no schedule or cost impact) <input type="checkbox"/> Acknowledged by Owner – to be processed and under a separate Change Order NAME: <div>SignatureDate</div></div>
<div>Approved by Contractor <input type="checkbox"/> Change Order to be requested NAME: <div>SignatureDate</div></div>	

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Change Order No. _____
(Form C-00 63
63) MA

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
----------	--------	-----------------------

Contract:	Date of Contract:
-----------	-------------------

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

The Contract Documents are modified as follows upon execution of this Change Order:

Description: _____

Attachments (list documents supporting change): _____

CHANGE IN CONTRACT PRICE:

CHANGE IN CONTRACT TIMES:

Original Contract Price:	Original Contract Times:	Working days	Calendar days
	Substantial completion (days or date):	_____	
\$ _____	Ready for final payment (days or date):	_____	

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____ :	[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____ :	Substantial completion (days):	_____
		Ready for final payment (days):	_____
\$ _____			

Contract Price prior to this Change Order:	Contract Times prior to this Change Order:	Substantial completion (days or date):	_____
		Ready for final payment (days or date):	_____
\$ _____			

[Increase] [Decrease] of this Change Order:	[Increase] [Decrease] of this Change Order:	Substantial completion (days or date):	_____
		Ready for final payment (days or date):	_____
\$ _____			

Contract Price incorporating this Change Order:	Contract Times with all approved Change Orders:	Substantial completion (days or date):	_____
		Ready for final payment (days or date):	_____
\$ _____			

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Date: _____	Date: _____	Date: _____
Approved by Funding Agency (if applicable):	Approved by Funding Agency (if applicable):	Approved by Funding Agency (if applicable):
Date: _____	Date: _____	Date: _____

Pursuant to MGL c.44, s31C, I certify that appropriated funds are available for the total amount of this Change Order.

Owner's Auditor/Accountant (Name) Date:

Pursuant to MGL c.30, s39I, reasons for deviation are as stated on Page 1. The specified deviation(s) does not materially injure the Project as a whole, the Work is of the same cost and quality or an equitable adjustment has been agreed upon, and the deviation is in the best interest of the Owner.

Owner Date:

Change Order

Instructions

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

This page intentionally left blank

Notice of Substantial Completion (C-00 65 15)

Project:	Owner:	Owner's Contract No.:
Contract:	Date of Contract:	

Contractor:

This NOTICE of Substantial Completion applies to:

☐ The following Systems, Equipment or specified portions ☐ : All Work under the Contract

Documents :

Date of Substantial Completion for above

The following documents are attached to and made part of this Notice.

Submitted by Contractor

Date

This page intentionally left blank

Certificate of Substantial Completion (Form C-00 65 16)

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

This [tentative] [definitive] Certificate of Substantial Completion applies to:

All Work under the Contract Documents: The following specified portions of the Work:

Date of Substantial Completion

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 Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. 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.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

Amended Responsibilities Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

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

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.

<hr/>	<hr/>
Executed by Engineer	Date

<hr/>	<hr/>
Accepted by Contractor	Date

<hr/>	<hr/>
Accepted by Owner	Date

Notice of Completion (Form C-00 65 18)

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:

Contractor:

This NOTICE of Completion applies to:

- ☐ All Work under the Contract Documents: ☐ The following specified portions:

Date of final Completion

The Work to which this Notice applies is ready for inspection by authorized representatives of Engineer and Owner. Contractor has completed all corrections, delivered all required documentation, and the Project, or portion designated above, is complete. The Date of Completion of the Project or portion thereof designated above is hereby declared by the Contractor.

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

Final Punchlist

Final Application for Payment

Only the **making and acceptance of final payment** will constitute:

1. A waiver of all claims by Owner against Contractor, except claims arising from any unsettled liens, from Defective Construction appearing after final inspection; from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
2. A waiver of all claims by Contractor against Owner other than those previously timely made in writing and still unsettled.

Submitted by Contractor

Date

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

**STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT**

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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STANDARD GENERAL CONDITIONS OF THE
CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
 12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
 13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
 14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
 15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
 16. *Cost of the Work*—See Paragraph 11.01 for definition.
 17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be

performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work

- and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *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.
40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its

effect, if any, on the Contract Price or Contract Times.

test, or approval referred to in the Contract Documents; or

1.02 Terminology

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. 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 Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

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

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard,

- c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

F. 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 Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional

insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

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

2.04 *Starting the Work*

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

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;
 - 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.

2.06 *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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial 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 for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within 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 component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

- A. The Contract Documents are complementary; what is required by one 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. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 Reference Standards

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or

employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies:

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

- a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
- b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;
 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
 3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier 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 editions; or
 2. 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.

- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to

use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

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

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

4.02 *Subsurface and Physical Conditions*

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

1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner 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; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or

arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

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

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the

extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

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

4.05 *Reference Points*

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

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner 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; or
2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

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

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

if any. 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 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, 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 a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by

Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by

an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

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

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

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

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a

certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property

(including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible

amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

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

5.07 *Waiver of Rights*

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

B. 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:

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

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

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

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

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's

exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

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

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *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 at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the 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.

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

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and “Or-Equals”*

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

submitted to Engineer for review under the circumstances described below.

1. *“Or-Equal” Items:* If in Engineer’s sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it 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; and
 - 3) it has a proven record of performance and availability of responsive service.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
2. *Substitute Items:*
 - a. If in Engineer’s sole discretion an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
 - b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
 - c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
 - d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor’s achievement of Substantial Completion on time,
 - b) 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

- c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
 - 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- 6.06 *Concerning Subcontractors, Suppliers, and Others*
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
 - C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
 - D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
 - E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.
 - F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.
- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
 - B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement,

shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and

all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (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 any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- 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.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *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. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the

Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner 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 claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

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

6.13 *Safety and Protection*

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

- 1. all persons on the Site or who may be affected by the Work;
- 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
- 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

- D. 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.

- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or 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).

- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

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

6.15 *Hazard Communication Programs*

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

6.16 *Emergencies*

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

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. 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 6.17.D.

- B. 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. *Submittal Procedures:*

- 1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the

indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

- d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate

approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures:

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

Continuing the Work

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

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 and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other

individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

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

1. observations by Engineer;
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 or the issuance of a notice of acceptability by Engineer;
6. any inspection, test, or approval by others; or
7. any correction of defective Work by Owner.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner 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 performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom 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 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 Delegation of Professional Design Services

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or

certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

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

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.

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

Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

8.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.09 *Limitations on Owner's Responsibilities*

8.01 *Communications to Contractor*

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

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

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.10 *Undisclosed Hazardous Environmental Condition*

8.03 *Furnish Data*

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

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.11 *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 Documents.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to

8.12 *Compliance with Safety Program*

- 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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER’S STATUS DURING CONSTRUCTION

9.01 *Owner’s Representative*

- A. Engineer will be Owner’s representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner’s representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor’s executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer’s efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer’s visits and observations are subject to all the limitations on Engineer’s authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer’s visits or observations of Contractor’s Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of

any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer’s consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

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

9.05 *Rejecting Defective Work*

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

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer’s authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer’s authority, and limitations thereof, as to design calculations and design drawings submitted in response to a

delegation of professional design services, if any, see Paragraph 6.21.

- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

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

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

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show

partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

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

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

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

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

10.04 *Notification to Surety*

- A. If 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.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional

or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and

paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall 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. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the 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 shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from

subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
 5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, 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 property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.
- B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety 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 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

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

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

11.02 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:*

1. Contractor agrees that:
 - a. 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
 - b. 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 on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a 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 on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work 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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

- 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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.
- 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:
 - 1. a mutually acceptable fixed fee; or
 - 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

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

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, 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 the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the

control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

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

13.01 *Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, 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 therewith as applicable.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and

Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. 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, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop

the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

- B. If 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. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. 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.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to

Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work;

and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payments

A. Applications for Payments:

- 1. At least 20 days before the date established 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. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to

protect Owner's interest therein, all of which must be satisfactory to Owner.

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

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations 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 9.07, 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 Documents; 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, or

- b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

- c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

- d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, 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 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

C. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

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

14.04 *Substantial Completion*

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- 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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to

make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. 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 tentative list.

14.05 *Partial Utilization*

- 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. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and

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 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
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 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

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

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner 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.

B. *Engineer's Review of Application and Acceptance:*

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

C. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- ##### A.
- If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and

accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

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

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

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

15.02 *Owner May Terminate for Cause*

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

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established

under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. 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

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.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 all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

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

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, 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;
3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
4. reasonable expenses directly attributable to termination.

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

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

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, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

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

17.04 *Survival of Obligations*

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

17.05 *Controlling Law*

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

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

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

17.02 *Computation of Times*

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

17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies

17.06 *Headings*

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

SECTION 00 73 05

SUPPLEMENTARY CONDITIONS

The following sections modify or supplement the Standard General Conditions of the Construction Contract ("General Conditions") included in Section 00 72 05 and are in addition to the modifications highlighted within the text thereof. All provisions which are not so modified or supplemented remain in full force and effect. The Supplementary Conditions may include certain provisions required by Laws and Regulations. Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations.

The terms used in these Supplementary Conditions have the meanings stated in the Standard General Conditions and as may be included within the Sections listed below.

- 00 73 10 Project Specific Requirements
- 00 73 19 Health and Safety Requirements
- 00 73 43 Wage Rate Requirements
- 00 73 46 Wage Determination Schedule
- 00 73 73 Statutory Requirements

END OF SECTION

SECTION 00 73 10

PROJECT SPECIFIC REQUIREMENTS

The address system used herein is the same as the address system used in the General Conditions, with the prefix "SC" added thereto. Additional terms used in this Section have the meanings stated below, which are applicable to both the singular and plural thereof.

This Section may include certain provisions required by Laws and Regulations but does not represent or reflect all applicable provisions and policies or Laws and Regulations and may only include excerpts and portions thereof. Other required provisions and policies, and Laws and Regulations, shall be deemed to be so included and incorporated herein. Contractor is solely responsible to determine, obtain, review, and interpret the full text of applicable provisions and policies, Regulations, and Laws.

SC-2.03 Before Starting Construction

Pursuant to subparagraph 2.03.A.3 regarding the Schedule of Values, the prices in the Bid Form will constitute the preliminary Schedule of Values for this Project.

Add the following immediately after Paragraph 2.03.B.

- C. Additionally, Contractor shall submit a Construction Operations Plan (also referred to as Work Plan) incorporating the Work Schedule.
 - 1. Construction methods and sequence of operations
 - 2. Proposed Site access
 - 3. Proposed erosion control measures and proposed measures to minimize impacts to existing vegetation and impacts to water quality in compliance with the General Requirements.

SC-2.05 Initial Acceptance of Schedules

Add the following immediately after subparagraph 2.05.A.4.

- 1. Contractor's Construction Operations Plan submitted pursuant to Paragraph 2.05.C. will be acceptable to Engineer if it accurately and reasonably addresses all aspects of the Work.

SC-9.05 Lands and Easements

Pursuant to Paragraph 4.01.A, no easements and rights-of-way exist for the Project except as may be identified for an individual Work Authorization.

SC-5.03 Subsurface and Physical Conditions

- A. Pursuant to Paragraph 5.03.A,
 - 1. the following reports of explorations and tests of subsurface conditions at or contiguous to the Site are known to Owner:
 - a. NONE

2. The following drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) are known to Owner:

- a. NONE

- E. Contractor to be aware of existing utilities known to contain asbestos materials and shall be handled in accordance with this contract.

SC-4.03 Reference Points

Pursuant to Paragraph 4.05.A, no surveys exist for the Project, however reference points may be assessed, and available Work Site data will be reviewed.

SC-5.06 Hazardous Environmental Conditions at Site

- A. Pursuant to Paragraph 4.06.A,

1. the following reports regarding Hazardous Environmental Conditions at the Site are known to Owner:

- a. NONE

2. The following drawings regarding Hazardous Environmental Conditions at the Site are known to Owner:

- a. NONE

SC-6.03 Contractor's Insurance

Pursuant to Paragraph 6.03, there are no other loss payees in addition to the individuals and entities specified in subparagraphs of 6.03.

Pursuant to subparagraph 6.03, also provide Owner's Protective Liability in the amount of \$3,000,000 general aggregate (per occurrence for bodily injury & property damage combined single limit).

Pursuant to subparagraph 6.03, Add the following for the Contractor's General Liability requirements:

- A. \$1,000,000 per occurrence; \$2,000,000 general aggregate; \$2,000,000 per project aggregate, including:
 - Broad Form Property Damage Liability including coverage for acts of terrorism
 - Completed Operations and Product Liability
 - Contractual Liability
 - Independent Contractors
 - Explosion, Collapse & Underground Hazards
 - Personal Injury Coverage, Exclusion "C" Deleted
 - Fire Legal Liability - \$1,000,000
 - Medical Payments - \$1,000,000

- B. Pollution Liability (covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from the Contractor's operations and completed operations maintained for no less than three years after final completion): \$1,000,000
- F. Excess or Umbrella Liability: \$5,000,000 per occurrence; \$5,000,000 general aggregate
- G. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:
- H. Professional Liability (E&O for engineers, architects or surveyors): \$1,000,000 for each claim with an annual aggregate of at least \$2,000,000 if professional services are required under the Specifications
- I. Owners Protective Liability: as may be specified in the Supplementary Conditions

Any self-insured retention (not allowed for Worker's Compensation) and/or deductibles must be identified and cannot exceed \$100,000 per occurrence without the prior approval of the Owner. Contractor must provide either an audited financial statement to confirm solvency or a letter of credit guaranteeing the \$100,000 in case of loss for the duration of the Project and for the Correction Period

SC-7.03 Labor; Working Hours

Pursuant to Paragraph 7.03.B, regular working hours for this Project are any 8-hour period between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday excluding holidays. Holidays shall be considered New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and Christmas Day.

SC-8.01 Related Work at Site

If Owner separately contracts for additional work on the Project at the Site, it will be identified in a Work Authorization.

SC-8.02 Coordination

Pursuant to Paragraph 8.02.A, for other work on the Project at the Site that Owner may separately contract, the Director of Public Works or the Water and Sewer Commissioner will have authority and responsibility for coordination of the activities among the various contractors.

SC-10.03 Resident Project Representative

Pursuant to Paragraph 10.03, the following shall be added:

- C. The Resident Project Representative (RPR) will be Engineer's employee or agent at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall be through or with the full knowledge and approval of Contractor. The RPR shall:
 - 1. Schedules: Review the Progress Schedule, schedule of Shop Drawing and Samples submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

2. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other Project-related meetings, and prepare and circulate copies of minutes thereof.
 3. Liaison:
 - a. Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative, to assist in providing information regarding the intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
 4. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
 5. Shop Drawings and Samples:
 - a. Record date of receipt of Samples and approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor and notify Engineer of availability of Samples for examination.
 6. Modifications:
 - a. Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer.
 - b. Transmit to Contractor in writing, decisions as issued by Engineer.
 7. Review of Work and Rejection of Defective Work:
 - a. Conduct on-site observations of Contractor's Work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
- D. The RPR shall not:
1. Authorize any deviation from the Contract Documents or substitution of materials or equipment, including "or-equal" items.
 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
 3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's superintendent.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences, or procedures of Contractor's Work unless such advice or directions are specifically required by the Contract Documents.
5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-Site by others except as specifically authorized by Engineer.
7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part or determine operational protocol that may affect the compliant operation of existing facilities.

SC-17.01 Final Resolution of Disputes

Pursuant to Paragraph 17.01, the following shall be added

- C. Subject to the requirements in set forth in this contract, Owner and Contractor agree that they will submit any and all unsettled Claims, counterclaims, disputes, and other matters in question between them arising out of or relating to the Contract Documents ("disputes"), to mediation by senior management representatives of each party for a period of 5 days. If resolution is not achieved, then the dispute shall be submitted to formal mediation prior to either of them initiating against the other, a demand for arbitration pursuant to Paragraph 16.02, unless delay in initiating arbitration would irrevocably prejudice one of the Parties. Any time limits within which to file a demand for arbitration shall be suspended with respect to a dispute submitted to mediation within those same applicable time limits and shall remain suspended until 10 days after the termination of the mediation. The mediator of any dispute submitted to mediation shall not serve as arbitrator of such dispute unless otherwise agreed.
- D. If the Claim is not resolved by senior management mediation or formal mediation, Engineer's action under Paragraph 11.05.C or a denial pursuant to Paragraphs 11.05.C.3 or 11.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 1. elects in writing to invoke any the dispute resolution process pursuant to Section 17; or
 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

END OF SECTION

SECTION 00 73 19

HEALTH AND SAFETY REQUIREMENTS

Contractor shall comply with the following minimum requirements and is solely responsible to determine, obtain, review and interpret the full text of applicable Laws and Regulations.

- A. Code of Federal Regulations, Chapter XVII-Occupational Safety and Health Administration (OSHA), Department of Labor, Title 29, Part 1926, Safety and Health Regulations for Construction:
 - 1. Contractor shall strictly comply with the Hazard Communication Standard 1910.1200 regulated by OSHA, including providing and maintaining Safety Data Sheets, labeling of hazardous substances, and providing required protective equipment and training and instruction to personnel on the Site including Owner and Engineer's personnel.
 - 2. Perform confined space work in accordance with OSHA General Industry 1910.146: Permit Required Confined Space Entry.
- B. ANSI/ASSE A10 series of safety construction standards including the "Manual of Accident Prevention In Construction" published by The Associated General Contractors of America.
- C. AASHTO Guide on Occupational Safety on Highway Construction Projects, Subpart N, 1926.550, relating to protection of personnel and equipment under electric lines and construction equipment clearances at overhead electric lines especially during operations using large vehicles.
- D. Pursuant to *MGL Chapter 30, Section 39S*, all employees to be employed at the Work Site 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. Any employee found on a Work Site subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.
- E. This Project is also subject to the following.
 - *MGL Chapter 82, The Laying Out, Alteration, Relocation and Discontinuance Of Public Ways, And Specific Repairs Thereon, Section 40:*
 - Section 40 Definitions
 - Section 40A Excavations; notice
 - Section 40B Designation of location of underground facilities
 - Section 40C Excavator's responsibility to maintain designation markings; damage caused by excavator
 - Section 40D Local laws requiring excavation permits; public ways

- MGL Chapter 82A, *Excavation and Trench Safety*
 - Section 1 Unattended open trenches; safety hazards; rules and regulations; fines
 - Section 2 Trench excavating permits; permits issued by board or officer; certificate of insurance; fees
 - Section 3 Form of trench excavation permits; required statements
 - Section 4 Definitions
 - Section 5 Additional requirements
- MGL Chapter 149
 - Section 6C Health and safety of general public and asbestos workers; rules and regulations*
 - Section 18A Sanitary and safety conditions; tools*
 - Section 18B Confined spaces; ventilation*
 - Section 18C Power transmission equipment*
 - Section 18D Ropes, hooks and cranes; use and operation*
 - Section 18E Safety precautions in dangerous undertakings* *Section 18F Explosives*
 - Section 18G Industrial truck and internal combustion equipment*
 - Section 129A Shoring Trenches for local governments*
- Massachusetts Department of Labor and Industries, Division of Occupational Safety (Chapter 454 CMR 10.00 et seq.)
- Massachusetts Department of Public Safety “*Excavation and Trench Safety*” (Chapter 520 CMR 14.00 et seq.)

END OF SECTION



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 Manchester by the Sea
Contract Number: **City/Town:** MANCHESTER
Description of Work: Installation of sewer force main and water main in various streets in MBTS
Job Location: 10 Central St MBTS 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>	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 - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.20	\$9.83	\$1.73	\$0.00	\$32.76
2	45	\$21.20	\$9.83	\$1.73	\$0.00	\$32.76
3	55	\$25.92	\$9.83	\$3.40	\$0.00	\$39.15
4	55	\$25.92	\$9.83	\$3.40	\$0.00	\$39.15
5	70	\$32.98	\$9.83	\$16.51	\$0.00	\$59.32
6	70	\$32.98	\$9.83	\$16.51	\$0.00	\$59.32
7	80	\$37.70	\$9.83	\$18.24	\$0.00	\$65.77
8	80	\$37.70	\$9.83	\$18.24	\$0.00	\$65.77

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.77	\$9.83	\$1.73	\$0.00	\$33.33
2	45	\$21.77	\$9.83	\$1.73	\$0.00	\$33.33
3	55	\$26.60	\$9.83	\$3.40	\$0.00	\$39.83
4	55	\$26.60	\$9.83	\$3.40	\$0.00	\$39.83
5	70	\$33.86	\$9.83	\$16.51	\$0.00	\$60.20
6	70	\$33.86	\$9.83	\$16.51	\$0.00	\$60.20
7	80	\$38.70	\$9.83	\$18.24	\$0.00	\$66.77
8	80	\$38.70	\$9.83	\$18.24	\$0.00	\$66.77

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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)						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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						
CHAIN SAW OPERATOR LABORERS - ZONE 2	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 OPERATING ENGINEERS LOCAL 4	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 OPERATING ENGINEERS LOCAL 4	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) 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

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>	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 - 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

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$25.51	\$13.00	\$0.77	\$0.00	\$39.28
2	40	\$25.51	\$13.00	\$0.77	\$0.00	\$39.28
3	45	\$28.70	\$13.00	\$16.69	\$0.00	\$58.39
4	45	\$28.70	\$13.00	\$16.69	\$0.00	\$58.39
5	50	\$31.89	\$13.00	\$17.20	\$0.00	\$62.09
6	55	\$35.08	\$13.00	\$17.70	\$0.00	\$65.78
7	60	\$38.27	\$13.00	\$18.21	\$0.00	\$69.48
8	65	\$41.46	\$13.00	\$18.71	\$0.00	\$73.17
9	70	\$44.65	\$13.00	\$19.22	\$0.00	\$76.87
10	75	\$47.84	\$13.00	\$19.74	\$0.00	\$80.58

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
Notes: Steps 1-2 are 6 mos.; Steps 3-5 are 1 year						
Apprentice to Journeyworker Ratio:1:1						
ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (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)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2023	\$50.30	\$14.50	\$16.15	\$0.00	\$80.95
	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 <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2023	\$51.87	\$14.50	\$16.15	\$0.00	\$82.52
	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>	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 / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	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	03/01/2024	\$54.73	\$8.83	\$20.27	\$0.00	\$83.83
FLOORCOVERERS LOCAL 2168 ZONE I	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 - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$24.63	\$8.83	\$1.76	\$0.00	\$35.22
2	45	\$24.63	\$8.83	\$1.76	\$0.00	\$35.22
3	55	\$30.10	\$8.83	\$3.52	\$0.00	\$42.45
4	55	\$30.10	\$8.83	\$3.52	\$0.00	\$42.45
5	70	\$38.31	\$8.83	\$16.75	\$0.00	\$63.89
6	70	\$38.31	\$8.83	\$16.75	\$0.00	\$63.89
7	80	\$43.78	\$8.83	\$18.51	\$0.00	\$71.12
8	80	\$43.78	\$8.83	\$18.51	\$0.00	\$71.12

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$25.30	\$8.83	\$1.76	\$0.00	\$35.89
2	45	\$25.30	\$8.83	\$1.76	\$0.00	\$35.89
3	55	\$30.93	\$8.83	\$3.52	\$0.00	\$43.28
4	55	\$30.93	\$8.83	\$3.52	\$0.00	\$43.28
5	70	\$39.36	\$8.83	\$16.75	\$0.00	\$64.94
6	70	\$39.36	\$8.83	\$16.75	\$0.00	\$64.94
7	80	\$44.98	\$8.83	\$18.51	\$0.00	\$72.32
8	80	\$44.98	\$8.83	\$18.51	\$0.00	\$72.32

Notes: Steps are 750 hrs.

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	\$57.22	\$14.59	\$27.50	\$2.98	\$102.29
SHEETMETAL WORKERS LOCAL 17 - A	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS)	03/01/2024	\$61.86	\$13.00	\$22.21	\$0.00	\$97.07
ELECTRICIANS LOCAL 103	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	\$57.22	\$14.59	\$27.50	\$2.98	\$102.29
	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537 (Local 138)</i>	03/01/2024	\$65.28	\$12.70	\$21.80	\$0.00	\$99.78
	09/01/2024	\$67.08	\$12.70	\$21.80	\$0.00	\$101.58
	03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537 (Local 138)</i>	03/01/2024	\$65.28	\$12.70	\$21.80	\$0.00	\$99.78
	09/01/2024	\$67.08	\$12.70	\$21.80	\$0.00	\$101.58
	03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38
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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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 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 - 03/16/2024						
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						
JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
LABORER LABORERS - ZONE 2	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)	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	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

LABORER: CARPENTER TENDER	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
LABORERS - ZONE 2						
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER	12/01/2023	\$38.36	\$9.40	\$16.89	\$0.00	\$64.65
LABORERS - ZONE 2						
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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 2)	01/01/2024	\$42.76	\$10.08	\$21.47	\$0.00	\$74.31
MILLWRIGHTS LOCAL 1121 - Zone 2	01/06/2025	\$45.09	\$10.08	\$21.47	\$0.00	\$76.64
	01/05/2026	\$47.42	\$10.08	\$21.47	\$0.00	\$78.97

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - MILLWRIGHT - Local 1121 Zone 2						
Effective Date - 01/01/2024						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.52	\$10.08	\$5.50	\$0.00	\$39.10
2	65	\$27.79	\$10.08	\$6.50	\$0.00	\$44.37
3	75	\$32.07	\$10.08	\$18.97	\$0.00	\$61.12
4	85	\$36.35	\$10.08	\$19.97	\$0.00	\$66.40
Effective Date - 01/06/2025						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$24.80	\$10.08	\$5.50	\$0.00	\$40.38
2	65	\$29.31	\$10.08	\$6.50	\$0.00	\$45.89
3	75	\$33.82	\$10.08	\$18.97	\$0.00	\$62.87
4	85	\$38.33	\$10.08	\$19.97	\$0.00	\$68.38
<div>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</div>						
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"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PAINTER (BRIDGES/TANKS) <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

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. <i>PAINTERS LOCAL 35 - ZONE 2</i>	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 (Local 138)</i>	03/01/2024	\$65.28	\$12.70	\$21.80	\$0.00	\$99.78
	09/01/2024	\$67.08	\$12.70	\$21.80	\$0.00	\$101.58
	03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38

Classification			Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - PIPEFITTER Local 537 (Local 138)								
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	\$21.80	\$0.00	\$63.88	
3	60	\$39.17		\$12.70	\$21.80	\$0.00	\$73.67	
4	70	\$45.70		\$12.70	\$21.80	\$0.00	\$80.20	
5	80	\$52.22		\$12.70	\$21.80	\$0.00	\$86.72	
Effective Date - 09/01/2024								
Step	percent	Apprentice Base Wage		Health	Pension	Supplemental Unemployment	Total Rate	
1	40	\$26.83		\$12.70	\$9.05	\$0.00	\$48.58	
2	45	\$30.19		\$12.70	\$21.80	\$0.00	\$64.69	
3	60	\$40.25		\$12.70	\$21.80	\$0.00	\$74.75	
4	70	\$46.96		\$12.70	\$21.80	\$0.00	\$81.46	
5	80	\$53.66		\$12.70	\$21.80	\$0.00	\$88.16	
<div>Notes:</div> <div>** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.</div> <div>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)</div>								
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)"								
PLUMBER			03/03/2024	\$67.74	\$14.32	\$19.11	\$0.00	\$101.17
PLUMBERS & GASFITTERS LOCAL 12 (Local 138)								
			09/01/2024	\$69.54	\$14.32	\$19.11	\$0.00	\$102.97
			03/02/2025	\$71.34	\$14.32	\$19.11	\$0.00	\$104.77

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - PLUMBER/GASFITTER - Local 12 (Local 138)						
Effective Date - 03/03/2024						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.71	\$14.32	\$6.88	\$0.00	\$44.91
2	40	\$27.10	\$14.32	\$7.82	\$0.00	\$49.24
3	55	\$37.26	\$14.32	\$10.65	\$0.00	\$62.23
4	65	\$44.03	\$14.32	\$12.53	\$0.00	\$70.88
5	75	\$50.81	\$14.32	\$14.41	\$0.00	\$79.54
Effective Date - 09/01/2024						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$24.34	\$14.32	\$6.88	\$0.00	\$45.54
2	40	\$27.82	\$14.32	\$7.82	\$0.00	\$49.96
3	55	\$38.25	\$14.32	\$10.65	\$0.00	\$63.22
4	65	\$45.20	\$14.32	\$12.53	\$0.00	\$72.05
5	75	\$52.16	\$14.32	\$14.41	\$0.00	\$80.89
Notes: ** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr Steps are 1 yr Step 4 with lic\$69.00, Step5 with lic\$76.87						
Apprentice to Journeyworker Ratio:**						
PNEUMATIC CONTROLS (TEMP.)	03/01/2024	\$65.28	\$12.70	\$21.80	\$0.00	\$99.78
PIPEFITTERS LOCAL 537 (Local 138)	09/01/2024	\$67.08	\$12.70	\$21.80	\$0.00	\$101.58
	03/01/2025	\$68.88	\$12.70	\$21.80	\$0.00	\$103.38
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"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY)	12/01/2023	\$39.36	\$9.40	\$16.89	\$0.00	\$65.65
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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"					
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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofing Waterproofing &Roofing Dampproofg) ROOFERS LOCAL 33	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 ROOFERS LOCAL 33	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 SHEETMETAL WORKERS LOCAL 17 - A	02/01/2024	\$57.22	\$14.59	\$27.50	\$2.98	\$102.29
	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$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	\$24.03	\$14.59	\$6.13	\$0.00	\$44.75
2	42	\$24.03	\$14.59	\$6.13	\$0.00	\$44.75
3	47	\$26.89	\$14.59	\$12.11	\$1.61	\$55.20
4	47	\$26.89	\$14.59	\$12.11	\$1.61	\$55.20
5	52	\$29.75	\$14.59	\$13.09	\$1.72	\$59.15
6	52	\$29.75	\$14.59	\$13.34	\$1.73	\$59.41
7	60	\$34.33	\$14.59	\$14.75	\$1.91	\$65.58
8	65	\$37.19	\$14.59	\$15.73	\$2.03	\$69.54
9	75	\$42.92	\$14.59	\$17.69	\$2.26	\$77.46
10	85	\$48.64	\$14.59	\$19.15	\$2.47	\$84.85

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$24.77	\$14.59	\$6.13	\$0.00	\$45.49
2	42	\$24.77	\$14.59	\$6.13	\$0.00	\$45.49
3	47	\$27.72	\$14.59	\$12.11	\$1.63	\$56.05
4	47	\$27.72	\$14.59	\$12.11	\$1.63	\$56.05
5	52	\$30.66	\$14.59	\$13.09	\$1.75	\$60.09
6	52	\$30.66	\$14.59	\$13.34	\$1.76	\$60.35
7	60	\$35.38	\$14.59	\$14.75	\$1.94	\$66.66
8	65	\$38.33	\$14.59	\$15.73	\$2.06	\$70.71
9	75	\$44.23	\$14.59	\$17.69	\$2.30	\$78.81
10	85	\$50.12	\$14.59	\$19.15	\$2.52	\$86.38

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 B) Zone 2</i>	03/01/2024	\$62.78	\$10.90	\$23.20	\$0.00	\$96.88
	10/01/2024	\$64.40	\$10.90	\$23.20	\$0.00	\$98.50
	03/01/2025	\$66.02	\$10.90	\$23.20	\$0.00	\$100.12

Apprentice - SPRINKLER FITTER - Local 550 (Section B) Zone 2

Effective Date - 03/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$21.97	\$10.90	\$12.80	\$0.00	\$45.67
2	40	\$25.11	\$10.90	\$13.60	\$0.00	\$49.61
3	45	\$28.25	\$10.90	\$14.40	\$0.00	\$53.55
4	50	\$31.39	\$10.90	\$15.20	\$0.00	\$57.49
5	55	\$34.53	\$10.90	\$16.00	\$0.00	\$61.43
6	60	\$37.67	\$10.90	\$16.80	\$0.00	\$65.37
7	65	\$40.81	\$10.90	\$17.60	\$0.00	\$69.31
8	70	\$43.95	\$10.90	\$18.40	\$0.00	\$73.25
9	75	\$47.09	\$10.90	\$19.20	\$0.00	\$77.19
10	80	\$50.22	\$10.90	\$20.00	\$0.00	\$81.12

Effective Date - 10/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$22.54	\$10.90	\$12.80	\$0.00	\$46.24
2	40	\$25.76	\$10.90	\$13.60	\$0.00	\$50.26
3	45	\$28.98	\$10.90	\$14.40	\$0.00	\$54.28
4	50	\$32.20	\$10.90	\$15.20	\$0.00	\$58.30
5	55	\$35.42	\$10.90	\$16.00	\$0.00	\$62.32
6	60	\$38.64	\$10.90	\$16.80	\$0.00	\$66.34
7	65	\$41.86	\$10.90	\$17.60	\$0.00	\$70.36
8	70	\$45.08	\$10.90	\$18.40	\$0.00	\$74.38
9	75	\$48.30	\$10.90	\$19.20	\$0.00	\$78.40
10	80	\$51.52	\$10.90	\$20.00	\$0.00	\$82.42

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
STEAM BOILER 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"						
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>	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 - 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

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$22.96	\$13.00	\$0.69	\$0.00	\$36.65
2	45	\$22.96	\$13.00	\$0.69	\$0.00	\$36.65
3	50	\$25.51	\$13.00	\$16.16	\$0.00	\$54.67
4	50	\$25.51	\$13.00	\$16.16	\$0.00	\$54.67
5	55	\$28.06	\$13.00	\$16.57	\$0.00	\$57.63
6	60	\$30.61	\$13.00	\$16.97	\$0.00	\$60.58
7	65	\$33.16	\$13.00	\$17.38	\$0.00	\$63.54
8	70	\$35.71	\$13.00	\$17.78	\$0.00	\$66.49
9	75	\$38.27	\$13.00	\$18.18	\$0.00	\$69.45
10	80	\$40.82	\$13.00	\$18.58	\$0.00	\$72.40

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 (Local 138)</i>	03/03/2024	\$68.74	\$14.07	\$18.36	\$0.00	\$101.17
	09/01/2024	\$70.54	\$14.07	\$18.36	\$0.00	\$102.97
	03/02/2025	\$71.34	\$14.32	\$18.61	\$0.00	\$104.27
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 00 73 43

WAGE RATE REQUIREMENTS

The content of this Section does not represent or reflect all applicable Laws and Regulations and may only include excerpts and portions of certain Laws and Regulations. Other provisions required by statute shall be deemed to be so included and incorporated herein. Contractor is solely responsible to determine, obtain, review, and interpret the full text of applicable Laws and Regulations.

The Contract is subject to minimum wage rates as issued by the Director of the Executive Office of Labor and Workforce Development, Department of Labor Standards and the requirements of MGL Chapter 149, Sections 26, 27 and 27A to 27H. Wage Determination Schedules are included in Section 00 73 46. Pursuant to MGL Chapter 149, Section 34B, wages paid to reserve police officers shall be the same prevailing rate of wage paid to regular police officers at the location of the Project.

Comply with requirements available on the Executive Office of Labor and Workforce Development website at:

<http://www.mass.gov/lwd/labor-standards/prevailing-wage-program>

Submit required records and statements of compliance in accordance with MGL Chapter 149, Section 27B using the latest Weekly Payroll and Compliance forms available on the EOLWD website. Copies included in this section are for information only.

The requirements of this Section may be updated annually for the term of the Contract.

ATTACHMENTS

- A. Massachusetts Prevailing Wage Law guidance and forms

END OF SECTION

SECTION 00 73 46

WAGE DETERMINATION SCHEDULE

The Project is subject to the following wage rates (included in this section) in accordance with the requirements included in Section 00 73 43. **The wage rates are subject to change annually for the term of the Contract.**

- Minimum wage rates as issued by the Director of the Executive Office of Labor and Workforce Development, Department of Labor Standards pursuant to MGL Chapter 149, Sections 26, 27 and 27A to 27H

END OF SECTION

SECTION 00 73 73

STATUTORY REQUIREMENTS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2007 Edition) included in Section 00 72 05. Provisions not so amended or supplemented remain in full force and effect unless amended or supplemented in another section. The terms used in this section have the meanings stated in the General Conditions. Additional terms used in this section, if any, have the meanings stated below which are applicable to both the singular and plural thereof. The address system used herein is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

This section includes certain provisions required by Laws and Regulations but does not represent or reflect all applicable provisions and policies or Laws and Regulations and may only include excerpts and portions thereof. Other required provisions and policies, and Laws and Regulations, shall be deemed to be so included and incorporated herein. Contractor is solely responsible to determine, obtain, review, and interpret the full text of applicable provisions and policies, Regulations, and Laws.

The Project is specifically subject to the provisions of the Massachusetts General Laws ("MGL").

SC-1.01.A.16 Contractor

Add the following language at the end of the definition.

Also referred to as "General Contractor" in applicable statutory provisions which may be used interchangeably and shall have the same meaning.

SC-1.01.A.30 Owner

Add the following language at the end of the definition.

Also referred to as "Awarding Authority" or "contracting authority" in applicable statutory provisions which may be used interchangeably and shall have the same meaning.

SC-1.01.A.42 Substantial Completion

Add the following language at the end of the definition.

For the purposes of MGL Chapter 30, Section 39G, *Completion of public works; semi-final and final estimates; payments; extra work; disputed items*, Substantial Completion shall also mean either that the Work has been completed except for Work having a valued at less than 1 percent of the then adjusted total Contract Price, or substantially all of the Work has been completed and opened to public use except for minor incomplete or unsatisfactory Work items that do not materially impair the usefulness of the Work as required by the Contract.

7. *material or Material* -- As used in MGL Chapter 30, Section 39M, *Contracts for construction and materials; manner of awarding*, regarding items equal to those specified, the word "material" shall mean and include any article, assembly, system, included in the Work, or any component part thereof.

SC-3 CONTRACT DOCUMENTS : INTENT, AMEND, REUSE

Add the following new paragraph immediately after Paragraph 3.05.

3.05 *Public Records*

- C. Pursuant to MGL Chapter 66 et seq, *Public Records*, related submittals, purchase orders, related pricing documents, and invoices will be public documents, and may be available for public and private distribution, except as specifically excluded. The Contractor will provide the Owner copies of any documents requested under this Law at no charge to the Owner or the requestor.

SC-6.01 Performance, Payment, and Other Bonds

Add the following new subparagraphs immediately after Paragraph 6.01.A.

1. Pursuant to MGL Chapter 30, Section 39A, *Construction contracts for public ways, airports or public works; truck rentals; security for payment*, and MGL Chapter 149, Section 29, *Bonds for payment for labor, materials, rentals or transportation charges (et al)*, the required payment bond shall also cover payment by the Contractor and Subcontractors for the rental or hire of dump trucks and “. . . the rental or hire of vehicles, steam shovels, rollers propelled by steam or other power, concrete mixers, tools and other appliances and equipment employed in such construction, . . .” and “. . . for payment of transportation charges directly related to such rental or hire. . .” Such security for payment of transportation charges shall be incorporated by appropriate reference thereto as an additional obligation or condition in the required bonds.
2. In addition, such bonds shall cover “. . . payment by Contractor and Subcontractors of any sums due trustees or other persons authorized to collect such payments from the Contractor or Subcontractors, for health and welfare plans, supplementary unemployment benefit plans and other fringe benefits which are payable in cash and provided for in collective bargaining agreements between organized labor and the Contractor or Subcontractors. . .”

SC-5.02 Licensed Sureties and Insurers

Add the following new subparagraphs immediately after Paragraph 6.01.A.

- I. Pursuant to MGL Chapter 149, Section 29D, *Surety company; bonds*:

“Every bid bond, every performance bond and every payment bond issued for any construction work in the commonwealth shall be the bond of a surety company organized pursuant to section 105 of chapter 175 or of a surety company authorized to do business in the commonwealth under the provisions of section 106 of said chapter 175 and be approved by the U.S. Department of Treasury and are acceptable as sureties and reinsurers on federal bonds under Title 31 of the United States Code, sections 9304 to 9308.”

- J. If there is more than one surety company, the surety companies shall be jointly and severally liable.

SC-6.03 Contractor's Insurance

Add the following language at the end of subparagraph 6.03.B.

6. Pursuant to MGL Chapter 149, Section 34A, *Contracts for public works; workers' compensation insurance; breach of contract; enforcement and violation of statute:*

Every Contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or other public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the Contractor shall, before commencing performance of such Contract, provide by insurance for the payment of compensation and the furnishing of other benefits under chapter one hundred and fifty-two to all persons to be employed under the Contract, and that the Contractor shall continue such insurance in full force and effect during the term of the Contract. No officer or agent contracting on behalf of the commonwealth, or any political subdivision thereof shall award such a Contract until he has been furnished with sufficient proof of compliance with the aforesaid stipulations. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the Contract and shall operate as an immediate termination thereof. No cancellation of such insurance, whether by the insurer or by the insured, shall be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the officer or agent who awarded the Contract at least fifteen days prior to the intended effective date thereof, which date shall be expressed in said notice. Notice of cancellation sent by the party proposing cancellation by registered mail, postage prepaid, with a return receipt of the addressee requested, shall be a sufficient notice. An affidavit of any officer, agent or employee of the insurer or of the insured, as the case may be, duly authorized for the purpose, that he has so sent such notice addressed as aforesaid shall be prima facie evidence of the sending thereof as aforesaid. This section shall apply to the legal representative, trustee in bankruptcy, receiver, assignee, trustee and the successor in interest of any such Contractor. The superior court shall have jurisdiction in equity to enforce this section.

Whoever violates any provision of this section shall be punished by a fine of not more than one hundred dollars or by imprisonment for six months, or both; and, in addition, any contractor who violates any provision of this section shall be prohibited from contracting, directly or indirectly, with the commonwealth or any political subdivision thereof, for the construction, alteration, demolition, maintenance or repair of, or addition to, any public works or public building for a period of two years from the date of conviction of said violation.

Add the following language at the end of subparagraph 6.04.C, 5.

6. The provisions of MGL Chapter 258, *Claims and Indemnity Procedure for the Commonwealth, its Municipalities, Counties and Districts and the Officers and Employees Thereof* and MGL Chapter 260, Section 2B *Tort Actions Arising from Improvements to Real Property* shall apply.

Add the following language at the end of subparagraph 6.04.C, in compliance with MGL 152

SC-7.03 Labor; Working Hours

Add the following new subparagraphs immediately after Paragraph 7.03.A.

1. Pursuant to MGL Chapter 30, Section 39S, *Contracts for construction; requirements*, Contractor shall furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work.
2. Pursuant to MGL Chapter 149, Section 26, *Public works; preference to veterans and citizens; wages*, preference shall be given to citizens of the Commonwealth of Massachusetts, citizens of the town or city where the Project is located, veterans and service-disabled veterans, and citizens of the United States.
3. The Contractor shall comply with the provisions of MGL Chapter 151B, *Unlawful Discrimination Because of Race, Color, Religious Creed, National Origin, Ancestry or Sex*.
4. The Contractor shall not participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue Code as amended or engage in conduct declared to be unlawful by MGL Chapter 151E, *Prohibition Of Certain Discrimination By Businesses, Section 2*.

Add the following new subparagraphs immediately after Paragraph 7.03.C.

1. Pursuant to MGL Chapter 149, Section 30, *Eight-hour day and six day week; emergencies; work on highways*, and Section 34, *Public contracts; stipulation as to hours and days of work; void contracts*:

“Every contract, except for the purchase of material or supplies, involving the employment of laborers, workmen, mechanics, foremen or inspectors, to which the commonwealth or any county or any town, subject to section thirty, is a party, shall contain a stipulation that no laborer, workman, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, sub-contractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency, or, in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid; provided, that in contracts entered into by the department of highways for the construction or reconstruction of highways there may be inserted in said stipulation a provision that said department, or any contractor or sub-contractor for said department, may employ laborers, workmen, mechanics, foremen and inspectors for more than eight hours in any one day in such construction or reconstruction when, in the opinion of the commissioner, public necessity so requires. Every such contract not containing the aforesaid stipulation shall be null and void.

SC-7.05 Substitutes and “Or-Equals”

Add the following language at the end of Paragraph 7.05.A.

The provisions of MGL Chapter 30, Section 39M, subsection (b) also apply to this Paragraph.

SC-6.10 Taxes

Add the following new subparagraph immediately after Paragraph 6.10.A.

1. MGL Chapter 64H, Section 6, *Exemptions*, subsection (f), exempts from Massachusetts sales tax, building materials and supplies to be used in the Project, and Contractor shall not include any amount, therefore. The words “building materials and supplies” shall include all materials and supplies consumed, employed, or expended in the construction, reconstruction, alteration, remodeling or repair of any building, structure, public highway, bridge, or other such public work, as well as such materials and supplies physically incorporated therein. Said words shall also include rental charges for construction vehicles, equipment and machinery rented specifically for use on the Project Site, or while being used exclusively for the transportation of materials for the Project.

SC-7.12 Record Documents

Add the following new paragraph and subparagraphs immediately after Paragraph 7.12.A.

- B. Subject to the provisions of MGL Chapter 266, Section 67C, *Capital facility construction projects, etc.; false entries in records; penalties*, and pursuant to MGL Chapter 30, Section 39R, *Definitions; contract provisions; management and financial statements; enforcement*:
 1. The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor, and
 2. until the expiration of six years after final payment, the office of inspector general, and the commissioner of capital asset management and maintenance shall have the right to examine any books, documents, papers, or records of the Contractor or of his Subcontractors that directly pertain to, and involve transactions relating to, the Contractor or his Subcontractors, and
 3. if the agreement is a contract as defined herein, the Contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the Awarding Authority, including in his description the date of the change and reasons therefor, and shall accompany said description with a letter from the Contractor’s independent certified public accountant approving or otherwise commenting on the changes, and
 4. if the agreement is a contract as defined herein, the Contractor has filed a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and
 5. if the agreement is a contract as defined herein, the Contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

- C. Every Contractor awarded a contract shall file with the Awarding Authority a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:
1. transactions are executed in accordance with management's general and specific authorization;
 2. transactions are recorded as necessary
 - i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and
 - ii. to maintain accountability for assets;
 3. access to assets is permitted only in accordance with management's general or specific authorization; and
 4. the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference. Every Contractor awarded a contract shall also file with the Awarding Authority a statement prepared and signed by an independent certified public accountant, stating that he has examined the statement of management on internal accounting controls, and expressing an opinion as to (1) whether the representations of management in response to this paragraph and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and (2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.
- D. Every Contractor awarded a contract by the commonwealth or by any political subdivision thereof shall annually file with the commissioner of capital asset management and maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the Awarding Authority upon request.
- E. A Contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to section forty-four C of chapter one hundred and forty-nine.
- F. Records and statements required to be made, kept or filed under the provisions of this section shall not be public records as defined in section seven of chapter four and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of clause (2) of paragraph (b).

SC-7.13 Safety and Protection

Add the following new subparagraph immediately after subparagraph 7.13, J.

- J. Pursuant to MGL Chapter 30, Section 39S, *Contracts for construction; requirements*, provide certification for each employee employed at the Work Site of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins Work.

SC-9.09 Limitations on Owner's Responsibilities

Add the following new subparagraph immediately after Paragraph 9.09.A.

1. Pursuant to MGL Chapter 30, Section 39J *Public construction contracts; effect of decisions of contracting body or administrative board*, a decision on a dispute shall not be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, or arbitrarily, is unsupported by substantial evidence, or is based upon error of law.

SC-10.06 Decisions on Requirements of Contract Documents and Acceptability of Work

Add the following new subparagraph immediately after Paragraph 10.06.A.

1. within 30 days pursuant to MGL Chapter 30, Section 39P, *Contracts for construction and materials; awarding authority's decisions on interpretation of specifications, etc.; time limit; notice* in Paragraph 9.08.B.
2. Pursuant to MGL Chapter 30, Section 39J *Public construction contracts; effect of decisions of contracting body or administrative board*, a decision on a dispute shall not be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, or arbitrarily, is unsupported by substantial evidence, or is based upon error of law.

SC-11.05 Owner-Authorized Changes in the Work

Add the following subparagraph immediately after Paragraph 11.01.A.

1. Changes to the Work are subject to the requirements of MGL Chapter 30, Section 39I, *Deviations from plans and specifications*.

SC-12.01 Claims

Add the following paragraph immediately after Paragraph 12.01.A.

5. Presentation of false, fictitious, or fraudulent Claims is subject to the provisions of MGL Chapter 266, Section 67B, *Presentation of false claims*.

SC-13.01 Cost of the Work

Pursuant to subparagraph 13.01.A.1, prevailing wage requirements are included in Section 00 73 43.

Add the following new subparagraph immediately after subparagraph 13.01.A.2.

3. The Project is exempt from sales tax as set forth in SC- 6.10.

SC-11.07 Change of Contract Price

Add the following new subparagraphs immediately after subparagraph 11.07.B.3. as required by MGL Chapter 30, Section 38A *Price adjustment clause in contracts for road, bridge, water and sewer projects awarded.*

4. **Monthly Price Adjustments for Certain Materials:** As required by Massachusetts Chapter 150 of the Acts of 2013, the following price adjustment clauses for fuel (both diesel and gasoline), liquid asphalt and Portland cement contained in cast-in-place concrete shall be applicable to the Project. The following Base Prices are established for the Project, based on period prices shown below as published by the Massachusetts Department of Transportation - Highway Division at

<https://www.mass.gov/service-details/2020-massdot-contract-price-adjustments>

Liquid Asphalt - \$637.50.00 per TON (February 2024),
Diesel – \$3.279 (February 2024),
Gasoline - \$2.582 per GALLON (February 2024),
Portland Cement - \$181.15 per TON (February 2024)

- a. **Monthly Price Adjustment for Hot Mix Asphalt (HMA) Mixtures:** This adjustment will provide for either additional compensation to the Contractor or repayment to the Owner, depending on an increase or decrease in the Period Price of Liquid Asphalt

Base Price: The Base Price of liquid asphalt listed above is the fixed price determined at the time of Bid by the Owner by using the same method as for the determination of the Period Price detailed below.

Price Adjustment: The Price Adjustment will be based on the variance in price for the liquid asphalt component only from the Base Price to the Period Price. It shall not include transportation or other charges. This Price Adjustment will occur on a monthly basis.

Period Price: The Period Price for this Contract shall be the Liquid Asphalt Period Price, per Ton.

Applicability: The Price Adjustment applies only to the actual virgin liquid asphalt content in the mixture placed on the Project in accordance with the Contract Documents.

Payment/Credit of Price Adjustment: The Contract Price of the hot mix asphalt mixture will be paid under the respective items in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the Work has been performed,

using the monthly Period Price for the month during which the Work was performed. The Price Adjustment will be a separate payment item and processed by Change Order. It will be determined by multiplying the number of tons of hot mix asphalt mixtures placed within pay limits during each monthly period as shown on submitted certified weigh slips times the liquid asphalt content percentage times the variance in price between Base Price and Period Price of liquid asphalt. This Price Adjustment will be paid or credited if the variance from the Base Price is 5 percent or more for a monthly period. No further Price Adjustments will be processed after the Contract is finally complete unless an extension of Contract Time is approved by the Owner.

- b. **Monthly Price Adjustment for Diesel Fuel and Gasoline:** This adjustment will provide for either additional compensation to the Contractor or repayment to the Owner, depending on an increase or decrease in the Period Price of Diesel Fuel or Gasoline

Base Price: The Base Price of Diesel Fuel and Gasoline listed above is the fixed price determined at the time of Bid by the Owner by using the same method as for the determination of the Period Price detailed below.

Price Adjustment: The Price Adjustment will be based on the variance in price from the Base Price to the Period Price.

Period Price: The Period Price for this Contract shall be the current Diesel Period Price and Gasoline Period Price per Gallon.

Applicability: The fuel Price Adjustment will apply to the overall Project.

Payment/Credit of Price Adjustment: The Price Adjustment will be a separate payment item and processed by Change Order. The price adjustment, as herein provided, upwards or downwards, will be made after the Work has been performed, using the monthly Period Price for the month during which the Work was performed. This Price Adjustment will be paid or credited if the variance from the Base Price is 5 percent or more for a monthly period. No further Price Adjustments will be processed after the Contract is finally complete unless an extension of Contract Time is approved by the Owner.

- c. **Monthly Price Adjustment for Portland Cement Concrete Mixes:** This adjustment will provide for either additional compensation to the Contractor or repayment to the Owner, depending on an increase or decrease in the adjustment:

Base Price: The Base Price of Portland cement listed above is the fixed price determined at the time of Bid by the Owner by using the same method as for the determination of the Period Price detailed below.

Price Adjustment: The Price Adjustment will be based on the variance in price for the Portland cement component only from the Base Price to the Period Price. It shall not include transportation or other charges. This Price Adjustment will occur on a monthly basis.

Period Price: The Period Price for this Contract shall be the current Portland cement Period Price per Ton.

Applicability: The price adjustment applies only to the actual Portland cement content in the mix placed on the Project in accordance with the Contract Documents for item 15 on the Unit Prices Form.

Payment/Credit of Price Adjustment: The Contract Price of the Portland cement content in the mix will be paid under the respective items in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the Work has been performed, using the monthly Period Price for the month during which the Work was performed. The Price Adjustment will be a separate payment item and processed by Change Order. It will be determined by multiplying the number of cubic yards of Portland cement concrete placed during each monthly period times the Portland cement content percentage times the variance in price between the Base Price and Period Price of Portland cement. This Price Adjustment will be paid or credited if the variance from the Base Price is 5 percent or more for a monthly period. No further Price Adjustments will be processed after the Contract is finally complete unless an extension of Contract Time is approved by the Owner.

SC-15.01 Progress Payments

Add the following language to Paragraph 15.01.A.

The provisions of MGL Chapter 30, Section 39G, *Completion of public works; semi-final and final estimates; payments; extra work; disputed items*, covering “periodic estimate” and “periodic payment” apply to this Project and shall be considered Progress Payments per Paragraph 15.01. The forms listed in Section 00 60 00 and included in the Contract Documents will be utilized.

Add the following new paragraph and subparagraphs immediately after subparagraph 15.01.E

- F. Pursuant to MGL Chapter 30, Section 39F, *Construction contracts; assignment and subrogation; subcontractor defined; enforcement of claim for direct payment; deposit, reduction of disputed amounts regarding payment to Subcontractors*, the following provisions shall be included in any subcontract in connection with Work under the Contract Documents.
1. Forthwith after the general Contractor receives payment on account of a periodic estimate, the general Contractor shall pay to each Subcontractor the amount paid for the labor performed and the materials furnished by that Subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the general Contractor.
 2. Not later than the 65th day after each Subcontractor substantially completes his Work in accordance with the Plans and Specifications, the entire balance due under the subcontract less amounts retained by the Awarding Authority as the estimated cost of completing the incomplete and unsatisfactory items of Work, shall be due the Subcontractor; and the Awarding Authority shall pay that amount to the general Contractor. The general Contractor shall forthwith pay to the Subcontractor the full amount received from the Awarding Authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the general Contractor.

3. Each payment made by the Awarding Authority to the general Contractor pursuant to subparagraphs (a) and (b) above for the labor performed and the materials furnished by a Subcontractor shall be made to the general Contractor for the account of that Subcontractor; and the Awarding Authority shall take reasonable steps to compel the general Contractor to make each such payment to each such Subcontractor. If the Awarding Authority has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the general Contractor or which is to be included in a payment to the general Contractor for payment to the Subcontractor as provided in subparagraphs (a) and (b) above, the Awarding Authority shall act upon the demand as provided in this section of the MGL.
4. If, within seventy days after the Subcontractor has substantially completed the subcontract Work, the Subcontractor has not received from the general Contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general Contractor, less any amount retained by the Awarding Authority as the estimated cost of completing the incomplete and unsatisfactory items of Work, the Subcontractor may demand direct payment of that balance from the Awarding Authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the Awarding Authority, and a copy shall be delivered to or sent by certified mail to the general Contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the Subcontractor has substantially completed the subcontract work. Within 10 days after the Subcontractor has delivered or so mailed the demand to the Awarding Authority and delivered or so mailed a copy to the general Contractor, the general Contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the Awarding Authority and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general Contractor and of the amount due for each Claim made by the general Contractor against the Subcontractor.
5. Within fifteen days after receipt of the demand by the Awarding Authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the Awarding Authority shall make direct payment to the Subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general Contractor, less any amount (i) retained by the Awarding Authority as the estimated cost of completing the incomplete or unsatisfactory items of Work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general Contractor in the sworn reply; provided, that the Awarding Authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The Awarding Authority shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.
6. The Awarding Authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) above in an interest-bearing joint account in the names of the general Contractor and the Subcontractor in a bank in Massachusetts selected by the Awarding Authority or agreed upon by the general Contractor and the

Subcontractor and shall notify the general Contractor and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.

7. All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) above shall be made out of amounts payable to the general Contractor at the time of receipt of a demand for direct payment from a Subcontractor and out of amounts which later become payable to the general Contractor and in the order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the Awarding Authority to the general Contractor to the extent of such payment.
8. The Awarding Authority shall deduct from payments to a general Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f) above, are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right in such deductions prior to any Claims against such amounts by creditors of the general Contractor."

SC-15.03 Substantial Completion

Add the following new paragraph immediately after Paragraph 15.03.F.

- G. The provisions of MGL Chapter 30, Section 39G, *Completion of public works; semi-final and final estimates; payments; extra work; disputed items*, covering substantial completion apply to this Project. The forms listed in Section 00 60 00 and included in the Contract Documents will be utilized.

SC-15.06 Final Payment

Add the following new subparagraphs immediately after subparagraph 15.06.A.1.

- a. The provisions of MGL Chapter 30, Section 39G, *Completion of public works; semi-final and final estimates; payments; extra work; disputed items* covering the final estimate and completion of the Work apply to this Project. The forms listed in Section 00 60 00 and included in the Contract Documents will be utilized.

SC-16.01 Owner May Suspend Work

Add the following new subparagraphs immediately after Paragraph 16.01.A.

1. Pursuant to MGL Chapter 30, Section 39O, *Contracts for construction and materials; suspension, delay or interruption due to order of awarding authority; adjustment in contract price; written claim*:
- a. The Awarding Authority may order the general Contractor in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as it may determine to be appropriate for the convenience of the Awarding Authority; provided however, that if there is a suspension, delay or interruption for 15 days or more or due to a failure of the Awarding

Authority to act within the time specified in the Contract, the Awarding Authority shall make an adjustment in the Contract Price for any increase in the cost of performance of the Contract but shall not include any profit to the general Contractor on such increase; and provided further, that the Awarding Authority shall not make any adjustment in the Contract Price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this Contract provides for an equitable adjustment of the Contract Price under any other Contract provisions.

- b. The general Contractor must submit the amount of a Claim under provision 1 above to the Awarding Authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under the Contract and, except for costs due to a suspension order, the Awarding Authority shall not approve any costs in the Claim incurred more than 20 days before the general Contractor notified the Awarding Authority in writing of the act or failure to act involved in the Claim.

In the event a suspension, delay, interruption or failure to act of the Awarding Authority increases the cost of performance to any Subcontractor, that Subcontractor shall have the same rights against the general Contractor for payment for an increase in the cost of his performance as provisions (a) and (b) above give the general Contractor against the Awarding Authority, but nothing in provisions (a) and (b) above shall in any way change, modify or alter any other rights which the general Contractor or the Subcontractor may have against each other.

SC-18.07 Controlling Law

Add the following new subparagraphs immediately after Paragraph 18.07.A.

1. This Contract is subject to all Laws and Regulations of the United States of America (including the U.S. Code of Federal Regulations), the Commonwealth of Massachusetts and other public authorities, and all amendments thereto. Where any requirements contained herein do not conform to or are inconsistent with such Laws and Regulations to which the Contract is subject or by which it is governed, such Laws and Regulations shall have precedence over any matters set forth herein.
2. The Project is specifically subject to MGL Chapters 30 and 149 for contracts awarded pursuant to MGL Chapter 30, Section 39M.
3. Statutes, Regulations, and portions and summaries thereof which are set forth or referred to in the Contract Documents shall be construed to include all amendments thereto in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids). The Owner and Engineer make no representation as to and assume no responsibility for the correctness or completeness of such statutory matters referred to or set forth herein.
4. Any provision in violation of the foregoing shall be deemed null, void and of no effect. Where conflicts with Laws and Regulations exist, the more stringent requirement shall apply.

END OF SECTION

SECTION 01 11 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Project Description
- B. Description of the Work
- C. Work Sequence and Coordination
- D. Special Requirements

1.02 PROJECT DESCRIPTION

- A. Replacement and abandonment of existing water mains, and associated features shown on the Contract Drawings on Mill, Forest and School Street, in the Town of Manchester-By-The-Sea, MA (Town/Owner).
- B. Installation of sewer force main, within existing Route 128 conduit, Mill and Forest Streets shown on the Contract Drawings.
- C. Provide all labor, equipment, tools, materials, and services required to complete the Work.

1.03 DESCRIPTION OF THE WORK

- A. The Work includes labor, material and equipment, services required in accordance with the Contract Documents and as more specifically described in the Specifications and Drawings, and includes, but is not limited to the following.
 - 1. Installation of 6" & 2" temporary potable water bypass and fire suppression service along abovementioned roadways.
 - 2. Excavate, replace, and install new water main as shown on drawings connecting to existing water mains.
 - 3. Installation of new sewer force main as shown of the drawings. Tie over existing water services onto new water main.
 - 4. Installation of new sewer services to the edge of the ROW.
 - 5. Install 4" of asphalt (binder), weekly, over open trenches as temporary trench patch.
 - 6. After 90 days have passed and after temporary trench asphalt has been placed, mill & overlay (2" depth) for the width of paved roadway, as shown on the plans or as directed by Owner.
- B. The Town will award the contract based on pricing received.

- C. Work Site locations: School Street, Mill Street, Forest Street, Route 128 and abutting areas. Locations are described on the DRAWINGS.
- D. Existing conditions and Site data: Existing Conditions based on Manchester-By-the- Sea Geographic Information System (GIS) Imagery and field survey where available and shall be considered APPROXIMATE. Evaluate existing conditions prior to excavation and notify ENGINEER of any discrepancies.

1.04 WORK SEQUENCE AND COORDINATION

- A. The work to be performed includes water main replacement and sewer force main installation and associated appurtenances as described above. Work may begin upon receiving the Notice to Proceed.
- B. Work regular business hours, defined as Monday through Friday, 8:00 AM to 4:00 PM, excluding holidays. Holidays shall be considered New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and Christmas Day.
- C. Unless otherwise provided by OWNER, CONTRACTOR shall be responsible for locating and securing a staging area for the purpose of storing equipment and materials to execute the Work.
- D. Access to businesses and residences must be maintained during prosecution of the Work, unless OWNER or Town of Manchester-By-The-Sea Safety Officer determines it is in the best interest of public safety to limit access. Notification to impacted residences must be completed prior to beginning work each week.
- E. It is assumed this project will be completed over the summer months of 2024 as weather allows.

1.05 SPECIAL PROJECT REQUIREMENTS

- A. Portions of the Work are within the FEMA 100-year floodplain, within the 100-foot buffer to bordering vegetated wetlands, and/or the 25-foot buffer to riverbank and therefore subject to the jurisdiction of the Conservation Commission. CONTRACTOR shall comply with all requirements of the Order of Conditions. Additionally, use stormwater best management practices to control stormwater runoff and protect resource areas impacted by the Work.
- B. Coordinate permitting through the Department of Public Works' office to obtain road opening permits.
- C. Police Details: CONTRACTOR shall be responsible for scheduling, all coordination and direct payment of details throughout the project without markup. The CONTRACTOR shall only request reimbursement for police detail invoices which have been paid and proof of such shall be submitted.

END OF SECTION

SECTION 01 15 30

**PAYMENT AND ADMINISTRATIVE PROCEDURES
AND QUALITY REQUIREMENTS**

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements relating to payment, the process of contract administration, and the methods of communicating, controlling, and assuring quality, and applies to all Specifications and Drawings.

1. In certain Paragraphs, checked items indicate those requirements applicable to the Project.
2. Provisions of this Section may be supplemented in other sections of Division 01.

- B. Section Includes

- 1.02 PAYMENT PROCEDURES
 - Schedule of Values
 - Payment Procedures
 - Change Procedures
 - Measurement and Payment Procedures
 - Correlation of Submittals
- 1.03 ADMINISTRATIVE REQUIREMENTS
 - Project Management and Coordination; Meetings
 - Documentation of Progress
 - Submittal Procedures
 - Closeout Procedures
- 1.04 QUALITY REQUIREMENTS
 - Reference Standards and Regulatory Req
 - Qualifications
- 1.05 ATTACHMENTS

1.02 PAYMENT PROCEDURES

- A. Schedule of Values: in accordance with Article 2 of the Standard General and Supplementary Conditions, if any.

1. Provide sufficient detail to allow for determination of the value of the Work at any degree of completion. For each line item, identify number and title of specification section in accordance with the Table of Contents.

Number of hardcopies: 1

Submit electronically by email

B. Payment Procedures: in accordance with Article 14 of Standard General and Supplementary Conditions, if any.

1. Submit Application for Payment using the form included in the Project Forms section. Utilize latest approved Schedule of Values for listing items in Application for Payment. Provide supporting documentation for items included in the Application for Payment.

Number of hardcopies: 3

Submit electronically by email

2. Payment Period: at intervals stipulated in the Agreement.
3. Submit an updated Progress Schedule with each Application for Payment.

C. Change Procedures: in accordance with Articles 10 and 12 of Standard General and Supplementary Conditions, if any, utilizing forms included in Section 00 60 00 Project Forms.

Number of hardcopies: 1 of each type of form and accompanying documentation.

Submit electronically by email

1. Field Order: as authorized by Paragraph 9.04 of the Standard General and Supplementary Conditions, if any.
2. Change Request: issued by ENGINEER, OWNER or CONTRACTOR to request or authorize minor variations and deviations, amendments or supplements to the Contract Documents. Initiate requests for substitute items per Paragraph 6.05 of the Standard General and Supplementary Conditions, if any, using a Change Request.
 - a. ENGINEER or OWNER to include a detailed description of a proposed change with supplementary or revised Drawings and Specifications, including a change in Contract Times related to the change (with a stipulation for any overtime work required) and the period of time during which the requested price (if any) will be considered valid. Prepare and submit an estimate within 15 days.
 - b. Describe the proposed change and its full effect on the Work. Describe the reason for the change and the effect on the Contract Price and Contract Time with full documentation (and a statement describing the effect on Work by separate or other CONTRACTORS).
3. Work Change Directive: as defined in Paragraph 1.01.A.51 of the Standard General and Supplementary Conditions, if any.
4. Change Order: in accordance with Articles 10 and 12 of the Standard General and Supplementary Conditions, if any.
 - a. *Stipulated Price Change Order*: based on CONTRACTOR's maximum price quotation or CONTRACTOR's request for a Change Order as approved by ENGINEER or OWNER.

- b. *Unit Price Change Order*: for pre-determined unit prices and quantities and executed on a fixed unit price basis. Execute Work under a Work Change Directive for unit costs or quantities of Work not pre-determined. Changes in Contract Price and Contract Time to be computed as specified for Time and Material Change Order.
 - c. *Time and Material Change Order*: based on itemized account and supporting data after completion of change within time limits indicated in the Standard General and Supplementary Conditions, if any. ENGINEER or OWNER and CONTRACTOR to determine the change allowable in Contract Price and Contract Time as provided in the Standard General and Supplementary Conditions, if any. Maintain detailed records of Work completed on this basis, provide full information for evaluation of proposed changes, and substantiate costs for changes in the Work.
5. "Or Equals" and Substitutes: Request "Or-Equal" and substitute items, items as a Change Request per subparagraph 1.02.C.2 above, with complete data substantiating compliance with Contract Documents.
- a. "Or-Equal" and substitute items will be processed in accordance with Paragraph 6.05 of the Standard General and Supplementary Conditions, if any, and subparagraph 1.03.C.6 below.

D. Measurement and Payment Procedures

- 1. Payment includes full compensation for required labor, material and equipment, tools, plant, transportation, services and incidentals; erection, application or installation and construction of an item of the Work; and overhead and profit, unless otherwise indicated in Section 01 20 25 Measurement and Payment.

E. Correlation of Submittals

- 1. Promptly revise Schedule of Values and Applications for Payment to record each authorized Change Order as a separate line item and adjust the Contract Price.
- 2. Promptly revise Progress Schedule to reflect any change in Contract Times and revise sub-schedules to adjust time for other items of the Work affected by the change.
- 3. Promptly enter changes in Project Record Documents.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Project Management and Coordination; Meetings

- 1. Contact information for OWNER and other entities related to the Project and special coordination requirements and contacts during prosecution of the Work will be provided at the Preconstruction Conference and Site Mobilization Meeting.
- 2. Inform OWNER and ENGINEER of the address for sending official correspondence and the address and telephone number of CONTRACTOR's representative who will be project manager and Site superintendent for the Contract.

3. During periods of construction and testing keep OWNER and ENGINEER informed in writing with name, address, and telephone number of CONTRACTOR's representative who will be responsible and available outside of normal working hours for emergency repairs and the maintenance of safety devices.

Identify the 24 hour, 7 days per week emergency response telephone or cell phone number that is staffed by a person (not a passive answering machine) or provide that a phone call will be returned within one hour.

4. Identify correspondence, submittals, drawings, data and materials, packing slips or other items associated with this Contract as specified in the Project Requirements and Procedures.
5. Coordinate scheduling, submittals, and Work of the various Specifications to effectuate an efficient and orderly sequence for installing interdependent construction elements, with provisions for accommodating items installed later.
6. Preconstruction Conference and Site Mobilization Meeting
 - a. OWNER to schedule an initial preconstruction conference in accordance with Paragraph 2.06 of the Standard General and Supplementary Conditions, if any.
 - b. Attendance required by OWNER, CONTRACTOR, ENGINEER, CONTRACTOR's Superintendent, Project Manager, and SUBCONTRACTORS as a minimum.
 - c. Sample Agenda
 - Distribute Contract Documents
 - Discuss design concepts.
 - Discuss preliminary Progress Schedule, Schedule of Submittals, Schedule of Values, and preliminary cash flow projections.
 - Designate personnel representing each party; communication procedures.
 - Procedures and processing of submittals, substitutions, applications for payments, Change Orders and Contract closeout procedures.
 - Scheduling
 - Use of premises by OWNER and CONTRACTOR
 - OWNER's requirements and partial occupancy
 - Construction facilities and controls provided by OWNER.
 - Temporary utilities provided by OWNER and CONTRACTOR
 - Survey and Site Layout
 - Security and housekeeping procedures
 - Schedules
 - Procedures for testing
 - Procedures for maintaining record documents.
 - Requirements for start-up
 - Inspection and acceptance of equipment put into service during construction period.
 - Access, laydown, and coordination with others
 - d. ENGINEER will record minutes and distribute draft copies promptly after meeting to OWNER and CONTRACTOR for review, then revise as required and distribute thereafter

to meeting participants, with copies to OWNER and CONTRACTOR, and those affected by decisions made.

7. Progress Meetings

- a. OWNER to schedule progress meetings beginning no later than 60 days after the Initial Conference and continue thereafter on a monthly basis throughout progress of the Work.
- b. Attendance required by CONTRACTOR, CONTRACTOR's Superintendent, major SUBCONTRACTORS and Suppliers, OWNER and ENGINEER as appropriate to agenda topics for each meeting.
- c. Sample Agenda
 - Review minutes of previous meetings – unresolved issues
 - Overall project status
 - Work Completed
 - Anticipated Work
 - Schedule
 - Pay Applications
 - Change Orders
 - Submittals
 - Observations, problems, and decisions
 - General Discussion/Comments
 - Action Items
 - Date and time for next meeting
- d. ENGINEER will record minutes and distribute draft copies promptly after meeting to OWNER and CONTRACTOR for review, then revise as required and distribute thereafter to meeting participants, with copies to OWNER and CONTRACTOR, and those affected by decisions made.

8. Pre-installation Conference and Coordination Meetings

- a. When required, convene a pre-installation conference at Site before commencing certain Work that requires coordination or has special requirements or approval.
- b. Convene coordination meetings as may be generally required.
- c. Attendance required by parties directly affecting, or affected by, Work of the specific Specification section.
 - 1) For pre-installation conference, notify OWNER and ENGINEER 5 days in advance.
 - 2) For coordination meetings, party requesting coordination meeting to notify other party(s).
- d. Review conditions, preparation and procedures, and coordination with related Work.

B. Documentation of Progress

1. Submit preliminary and final Progress Schedules as specified in Paragraphs 2.05 and 2.07 of the Standard General and Supplementary Conditions, if any, or as established in Notice to Proceed.

Number of hardcopies: 1

Submit electronically: by email

- a. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
 - b. Indicate estimated percentage of completion for each item of Work at each submission.
 - c. Indicate dates for fabrication, factory testing, delivery, shipping and field testing, and material and equipment delivery dates, including those furnished by OWNER. Coordinate with Schedule of Submittals.
2. Submit revised Progress Schedule on monthly basis and with each Application for Payment, identifying changes since previous version. Coordinate content with Schedule of Values, if any.
 3. Documentation of pre-construction conditions, construction progress, and final conditions:

Construction Photographs: to record Site conditions. Ensure existing conditions of roadway surfaces, curbing, berms, sidewalks, driveways, property bounds, landscaped areas, abutters property and any other items that might be affected by the Work are clearly recorded; Submit prior to starting construction.

- A. Construction photographs: electronic in PDF or JPG format, minimum 300 dpi quality and a minimum resolution of 6.0 megapixels. Identify photographs with date, time, orientation, and Project identification.

Number of copies: 1

Submit electronically: by email

Digital Video Recording: Video record, in color, all areas of the Project Site. Ensure existing conditions of roadway surfaces, curbing, berms, sidewalks, driveways, property bounds, landscaped areas, abutters' property and any other items that might be affected by the Work are clearly recorded.

- A. Submit prior to the starting construction and at completion of construction.

Arrange for video recordings to be conducted by a professional videographer in digital videodisc (DVD) format. Include clear and concise audio descriptions of the existing Project Site conditions.

Submit 1 copy of the first completed video recording to the ENGINEER for review of visual and audio quality. Re-record any recording furnished which, in the opinion of the ENGINEER, are poor quality or incomplete at no additional cost to OWNER. Submit N/A copies of approved videos.

4. Reports

- a. Submit weekly Safety Reports signed by the Safety Representative.

Number of hardcopies: 1

Submit electronically: by email

C. Submittal Procedures

1. Schedule submittals to expedite the Project and coordinate with schedules required by Paragraph 1.03.B above. Deliver each submittal in the quantity and electronic form indicated to ENGINEER (with copy to OWNER where required) at the addresses specified at the Preconstruction Conference and Site Mobilization Meeting. Coordinate submission of related items.
2. Present submittals in a clear and thorough manner, in English and using English units. Provide space for CONTRACTOR, ENGINEER, and OWNER's review stamps. Use sheet size of not less than 8 1/2 by 11 inches and not more than 24 by 36 inches.
3. Revise and resubmit documents as required. Identify all changes made since previous submittal. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions. Submittals not requested on the submittal schedule may not be recognized or processed.
4. Submit preliminary and final Schedule of Submittals as specified in Article 2 of the Standard General and Supplementary Conditions, if any, or as established in Notice to Proceed. Include all submittals specified in the Standard General and Supplementary Conditions, if any, General Requirements, and other Specification sections.

Number of hardcopies: 1

Submit electronically: by email

- a. Include description of each submittal, date by which each submittal will be delivered to ENGINEER and OWNER date by which each submittal must be approved to maintain project schedule, and relevant section reference.
- b. Allow 15-30 days from receipt of submittal/resubmittal for ENGINEER review of submittals and possible resubmittal.

5. Shop Drawings and Samples: Submit in accordance with Paragraph 6.17 of the Standard General and Supplementary Conditions, if any, and as follows, and coordinate with the Schedule of Submittals required in subparagraph 4 above.

Number of prints: 1

Electronic format: PDF & DWG

Submit electronically: by email

- a. Complete the submittal transmittal form included as an attachment to this Section as is indicated, numbering each submittal consecutively. Assign resubmittals the same transmittal number as the original with a suffix of a sequential letter to indicate the resubmittal (e.g. the first resubmittal of submittal 25 would be number 25A.) Include only those documents previously issued under original transmittal number in resubmittals. Do not combine new submittals with resubmittals.
 - b. Attach a transmittal form to each group of Shop Drawings, manufacturer's literature, equipment data and Samples submitted. Use a sufficient number of transmittal forms so that: items on a single transmittal form pertain to the same equipment item, specification section or element of Work; items on a single transmittal form are either original submittals or the same number resubmittal; and each Sample is listed on a separate transmittal form.
 - c. ENGINEER to complete review in accordance with Paragraph 6.17.D. of the Standard General and Supplementary Conditions, if any.
 - d. Submittals which do not have a fully completed transmittal form will be returned along with unreviewed attachments. Returned submittals, even though incomplete, will be counted as a submittal.
 - e. CONTRACTOR shall reimburse OWNER for ENGINEER's time for resubmittals per Paragraph 6.17.E. of the Standard General and Supplementary Conditions.
 - f. Submission of any Shop Drawing or Sample bearing CONTRACTOR's and ENGINEER's approval shall constitute a representation to OWNER that the requirements of Paragraph 6.17 of the Standard General and Supplementary Conditions, if any, have been fulfilled.
6. Variations: Identify variations from Contract Documents and material and equipment or system limitations which may be detrimental to successful performance of the completed Work and identify reasons therefor in accordance with subparagraph 6.17.C.3 of the Standard General and Supplementary Conditions, if any.
- a. Clearly identify requests for "Or-Equal" and substitute items and submit per Paragraph 6.05 of Standard General and Supplementary Conditions, if any, and subparagraph 1.02.C.5 above. Substitute items will not be considered when indicated or implied on Shop Drawing or material and equipment data submittals without separate written request, or when acceptance will require revision to the Contract Documents.

7. Manufacturers' Installation Instructions and Certificates: Submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing.

Number of prints: 6

Electronic format: PDF & DWG

Submit electronically: by email

- a. Indicate special procedures, perimeter conditions requiring special attention and special environmental criteria required for application or installation.
- b. Submit manufacturers' certificates for recent or previous test results on material or equipment, but they must be acceptable to ENGINEER and OWNER. Indicate material or equipment conforms to or exceeds specified requirements and provide supporting reference date, affidavits, and certifications as appropriate.
- c. Submit test results, data, and reports and certifications to ENGINEER based on tests performed. Submit test reports and certifications for independent testing services specified.

8. Record Documents and Closeout Submittals: submit in accordance with Paragraph 6.12 of the Standard General and Supplementary Conditions, if any, and Paragraph 1.03.D below.

- a. *As-Builts for Material and Equipment*

Number of prints: 3

Electronic format: PDF & DWG

Submit electronically by email and hardcopy if requested

Indicate "As-Supplied" in revision block and sign. Show all changes and revisions to Final Completion per Execution and Closeout Requirements.

- b. *Conformed to Construction Record Drawings*: Submit for ENGINEER's use in preparing final Record Drawings.

Number of prints: 3

Electronic format: PDF & DWG

Submit electronically by email

Indicate "Conformed by CONTRACTOR to Construction Records" in revision block and sign. Show all changes and revisions to Final Completion per Execution and Closeout Requirements.

- c. *Warranties and Guarantees*: Submit duplicate notarized copies of warranty documents which are executed and transferable from SUBCONTRACTORS, Suppliers, and manufacturers. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of Warranty Period.

In PDF format: by email

Submit 6 copies in ring binders with durable plastic covers and table of contents

- d. *Operation and Maintenance Data*

- 1) Submit draft of completed volumes 30 days prior to equipment startup. Revise content of all sets as required prior to final submission.

Number of hardcopies: 6

Submit electronically: by email

- 2) Submit final volumes within 10 days after final inspection.

Submit electronically: by email

Submit 6 copies of data in ring binders with durable plastic covers with 8 1/2 by 11-inch text pages. Cover: title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of Project, and subject matter of binder when multiple binders are required.

- a) Subdivide binder contents with permanent page dividers logically organized as described below with laminated plastic tabs and clearly print the contents. Prepare a Table of Contents for each volume, with material, equipment, or system description identified, in three parts as follows.

Part 1: Directory, listing names, addresses, and telephone numbers of CONTRACTOR, SUBCONTRACTORS, and major equipment Suppliers, and service representative.

Part 2: Operation and maintenance instructions arranged by system and subdivided by Specification section.

For each system, identify names, addresses, and telephone numbers of SUBCONTRACTORS and Suppliers. Identify the following:

- Significant design criteria
- List of equipment with As-Built certified "As- Supplied"
- Parts list for each component
- Operating instructions
- Inspection, maintenance and adjustment instructions for equipment and systems
- Lubrication and maintenance schedules

- Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents
- Troubleshooting guides
- Schematic diagrams

Part 3: Material Safety Data Sheets

Part 4: Other Project documents and certificates, including the following:

- Certificates
- Photocopies of warranties

D. Closeout Procedures

1. Substantial Completion shall have been achieved when the following has been completed and the requirements of Paragraph 14.04 of the Standard General and Supplementary Conditions, if any, have been met.
 - a. Work is complete, systems are successfully operating, and final testing has been successfully completed.
 - b. A full inventory of the spare parts and special tools purchased by the OWNER are replenished and in the custody of the OWNER.
 - c. The Site has been restored to the satisfaction of the OWNER.
 - d. An inspection of the Work has been completed by the ENGINEER and the OWNER.
 - e. An updated Punch List is provided.
 - f. The CONTRACTOR's written warranty and guarantee has been submitted as required by Paragraph 16.19.D. of the Standard General and Supplementary Conditions, if any.
 - g. A Certificate of Substantial Completion has been provided in accordance with Paragraph 14.04.C. of the Standard General and Supplementary Conditions, if any.
2. The CONTRACTOR shall have sole care, custody, and control of the Work until achievement of Substantial Completion. During the period between Substantial Completion and the date for Final Completion, CONTRACTOR shall be given access to correct items on the Punch List and achieve Final Completion.
3. The date of achieving Substantial Completion is the date set forth in the Certificate of Substantial Completion that is accepted and signed by the OWNER.

4. Final Completion shall have been achieved when the Work is complete, the requirements of Paragraphs 14.06 and 14.07 of the Standard General and Supplementary Conditions, if any, have been met, and when the following is complete.
 - a. Substantial Completion has been achieved and liquidated damages for failure to meet Substantial Completion Date have been paid.
 - b. All Work including Punch List Items has been completed.
 - c. Final cleaning has been conducted and CONTRACTOR equipment and supplies including waste materials have been removed from the Site and legally disposed of.
 - d. A full set of record documents have been submitted as specified in subparagraph 1.03.C.8 above and CONTRACTOR's written warranty and guarantee has been resubmitted if adjusted.
 - e. Inspections required by Laws and Regulations are complete. Certificates and permits to occupy and operate have been issued if required.
 - f. Spare parts, maintenance and extra materials have been delivered in quantities specified to Project Site and stored as directed.
 - g. A request for final inspection in accordance with Paragraph 14.06 of the Standard General and Supplementary Conditions, if any, has been submitted to the ENGINEER and the inspection has been completed and the results accepted by the OWNER.
 - h. A Final Application for Payment has been submitted to the ENGINEER identifying total adjusted Contract Price, previous payments, and balance due along with required documentation in accordance with Paragraph 14.07.A. of the Standard General and Supplementary Conditions, if any.

1.04 QUALITY REQUIREMENTS

A. Reference Standards and Regulatory Requirements

1. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or Laws or Regulations of any governmental authority are used in accordance with Paragraph 3.02 of the Standard General and Supplementary Conditions, if any.
2. Acronyms and abbreviations used are defined in the applicable versions of the Encyclopedia of Associations published by Gale (part of Cengage Learning) generally available in large libraries and on the internet.

B. Qualifications

1. Meet or provide capability to meet the criteria specified in individual Specification sections in connection with various portions of the Work of the Contract Documents.
2. As a minimum, CONTRACTOR shall meet the requirements outlined in section 00 45 13.

1.05 ATTACHMENTS

A. NONE

END OF SECTION

SECTION 01 20 25

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This Section describes the measurement and payment for the Work to be completed under each item in Section 00 41 01 Bid Form, which may also be referred to as “pay item”.
- B. Payment procedures are in accordance with the Agreement, Article 14 of the General Conditions, the Supplementary Conditions (if any), and the General Requirements.
- C. Measurement: as determined, verified, or approved by ENGINEER or OWNER in accordance with Paragraph 11.03 of the General Conditions, the Supplementary Conditions (if any), and the General Requirements, except as otherwise specified.
- D. The Work described in each pay item shall be as described in the Contract Documents and not included in other pay items.
 - 1. Pay item descriptions are general and may not specifically describe all associated Work or elements thereof, do not constitute Contract Documents, and do not supersede the content of the Contract Documents.
 - 2. Review the Contract Documents for Work associated with each pay item. Claims for being unfamiliar with the content of the Contract Documents will not be considered.
- E. The following Work is not specifically described or designated as a pay item, is considered incidental to all pay items and shall not be measured separately for payment.
 - 1. Division 01 General Requirements EXCEPT those items included in Mobilization/Demobilization.
 - 2. Materials, equipment, and services necessary to verify existing field conditions and the location, size, type, material, and orientation of existing pipes and utilities.
 - 3. Restoration of all areas disturbed by the CONTRACTOR within the limits of Work, including planting.
 - 4. Field and laboratory testing and reporting by independent laboratory, including but not limited to compaction of backfill materials; aggregate gradation; and concrete testing.
 - 5. Sewer and drain crossings and any required repairs.
 - 6. Gate valve and utility abandonment within the limit of work.
- F. Payment will not be made for restoration of areas disturbed by the CONTRACTOR outside the limits of Work.

- G. Payment will only be made for those utility services, including water and fire services, specifically identified for replacement. Relocation or replacement for the CONTRACTOR's convenience or due to breakage by the CONTRACTOR of any other utility services or at locations which could reasonably be assumed, shall be at no cost to OWNER.
- H. Design, installation and removal of excavation support systems, temporary and permanent utility/structure support systems associated with a pay item shall be considered incidental to that pay item.
- I. Additional dewatering and erosion control (including installation, operation, maintenance, removal and off Site disposal of erosion control devices) associated with a pay item shall be considered incidental to that pay item.
- J. Pay items identified as a Contingency Allowance will be processed per Article 11.02 of the General Conditions.
- K. Add Alternate Item numbers correlate to the Base Bid Items and shall be enforced as described herein.
- L. Police details will be direct billed by the police department to the CONTRACTOR whom will direct bill to the OWNER utilizing the allowance item provided in the bid without markup. Provide daily detail slips to the ENGINEER. Police details scheduled and not used by the CONTRACTOR will be back-charged to CONTRACTOR.

1.02 MEASUREMENT AND PAYMENT BASIS (Base Bid & Alternatives as Applicable)

ITEM 1 Mobilization/Demobilization	
Measurement	Per event
Payment	Percent of lump sum price on Schedule of Values
Schedule of Payment	<ol style="list-style-type: none"> 1. 50% at Project Commencement 2. 25% @ Substantial Completion 3. 25% @ Final Completion
<p>Includes delivery to and removal of equipment from the Project Site, temporary utilities, facilities and controls, obtaining necessary permits including associated fees, insurance and bond costs, signage, development of pre-construction schedules and plans required by the General Conditions, Supplementary Conditions and General Requirements, necessary pre-construction investigations, verifying existing field conditions, coordination, utility coordination, and Site clean-up, restoration and closeout.</p> <p>Note: Owner will waive fees associated with road opening and trench permits and costs for these permits shall not be included in this item.</p>	

ITEM 2a, 2b, 2c, 2d 4"/6"/8"/12" Cement Line Ductile Iron Pipe	
Measurement	As measured along the horizontal projection of the centerline of the pipe, measured from and to face of water pipe fittings and valves.
Payment	Unit Price per Linear Foot
Schedule of Payment	Monthly based on work completed
<p>Material and equipment, services, installation, construction and testing inherent to the Work to furnish and install Cement Line Ductile Iron pipe including clearing and grubbing, saw cutting, excavation, removing and disposing of excess material, removing and disposing of existing concrete encasement, shoring/bracing, dewatering, removing and disposing existing pipe, hydrants, valves and appurtenances, capping existing water mains abandoned in place, support of existing utilities, restraining thrust with rods and/or concrete, joint restraints, mega-lug fittings, pipe bedding, blanket and backfill, gravel roadway base, geotextile fabric, connecting to existing water mains (as applicable), compaction & testing, crossing utilities, support of existing utilities, chlorination, testing, bypass & water services, tree trimming, removing and replacing signs, fences and mail boxes, replacement of bituminous and concrete curbing, and other incidental Work, as shown on the Drawings and as specified or required by field conditions.</p>	

ITEM 3 1" Copper Tubing	
Measurement	As measured along the centerline of the pipe, from outside face of corporation stop outside face of curb stop.
Payment	Unit Price per Linear Foot
Schedule of Payment	Monthly based on work completed
All labor, tools, equipment and materials to furnish and install copper service tubing, saw cutting, excavation, shoring/bracing, disposing of existing service piping, sand bedding and blanket, backfill, compaction crossing of underground utilities, support of existing utilities as specified, loam and seed, tree trimming, removing and replacing signs, fences, and mailboxes, removing and resetting granite and bituminous curbs, removing and resetting sidewalk, removing and resetting guard rails, and all other incidentals necessary to furnish and install water service fittings, complete in place, as specified, shown on the Drawings or required by field conditions.	

ITEM 4 1" Corporation	
Measurement	Units installed complete in place
Payment	Unit Price per each
Schedule of Payment	Monthly based on work completed
All labor, equipment, tools, and materials to furnish and install corporation stop and saddles, couplings, unions, clearing and grubbing, saw cutting, excavation, shoring/bracing, removing and disposing of excess material, tapping pipe, connecting to existing service, crossing of underground utilities, support of existing utilities as specified in the bid documents, sand bedding and blanket, gravel roadway base, backfill, compaction, loam and seed, tree trimming, removing and replacing signs, fences, and mailboxes, removing and resetting granite and bituminous curbs, removing and resetting guard rails, and all other incidentals necessary to furnish and install water service fittings, complete in place, as specified, shown on the Drawings or required by field conditions.	

ITEM 5 1" Curb Stop & Box	
Measurement	Units installed complete in place
Payment	Unit Price per Each
Schedule of Payment	Monthly based on work completed
All labor, equipment, tools, and materials to furnish and install curb stops and boxes, couplings, unions, clearing and grubbing, saw cutting, excavation, shoring/bracing, removing and disposing of excess material, tapping pipe, connecting to existing service, crossing of underground utilities, support of existing utilities as specified in the bid documents, sand bedding and blanket, gravel roadway base, backfill, compaction, loam and seed, tree trimming, removing and replacing signs, fences, and mailboxes, removing and resetting granite and bituminous curbs, removing and resetting guard rails, and all other incidentals necessary to furnish and install water service fittings, complete in place, as specified, shown on the Drawings or required by field conditions.	

ITEMS 6a, 6b, 6c, 6d 4"/6"/8"/12" Gate Valve & Box	
Measurement	Units installed complete in place
Payment	Unit Price per Each
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work to furnish and install valves and valve boxes, cutting valves into existing mains where required, verifying outside diameter of existing pipe, clearing and grubbing, saw cutting, excavation, removing and disposing of excess materials, shoring/bracing, dewatering, cutting valves in to existing pipe, removing and disposing existing pipe, valves and appurtenances, plugging and capping existing water mains abandoned in place, valve installation, restraining thrust with rods, mega-lug fittings or concrete thrust blocks, blocking for support of valve, bedding, backfill and compaction, gravel roadway base, geotextile fabric, wax tape, crossing of underground utilities, support of existing utilities, tree trimming, removing and replacing signs, fences and mail boxes, resurfacing gravel surfaces, and other incidental Work, as shown on the Drawings and as specified or required by field conditions.	

ITEM 7 Hydrants	
Measurement	Each installed, complete in place, set in true horizontal and vertical alignment and with bury line at finished grade
Payment	Unit Price per Each
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work to furnish and install hydrants, coordinate with Towns Water Department, clearing and grubbing, saw cutting, excavation, shoring/bracing, removing and disposing existing pipe, valves, fittings and hydrants, plugging and capping existing water mains abandoned in place, restraining thrust with rods and/or concrete, restrained joint fittings, mega-lug fittings, connecting existing water mains (as applicable), new tees, gate valves, ductile iron pipe for hydrant assembly, crushed stone dry well, roofing felt, bearing stone, installation of off-sets and extensions to set bury line to finished grade, thrust blocks, geotextile fabric, drainage sump setting true in vertical and horizontal plane, setting bury line at finish grade, bedding, backfill and compaction, gravel roadway base, crossing of underground utilities, support of existing utilities, replacement of existing pipe bollards, painting hydrant, tree trimming, fences, and mailboxes, and other incidental Work, as shown on the Drawings and as specified or required by field conditions.	

ITEM 8 Fittings	
Measurement	Pounds of fittings installed, complete in place
Payment	Unit Price per Pounds
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work to furnish and install fittings on new and existing water mains, clearing and grubbing, saw cutting, excavation, removing and disposing of excess materials, removing and disposing of concrete encasement shown on Drawings, removing and disposing of existing thrust restraints, shoring/bracing, dewatering, removing and disposing existing pipe, valves and appurtenances, plugging and capping existing water mains abandoned in place, wax tape, restraining thrust with rods, mega-lug fittings, bedding and backfill, geotextile fabric, connecting existing water mains (as applicable), compaction, crossing of underground utilities, loam and seed, tree trimming, removing and replacing signs, fences and mail boxes, support of existing utilities, and other incidental Work, as shown on the Drawings and as specified or as required by field conditions.	

Item 9 Water Distribution Bypass (Forest Street)	
Measurement	Portion of Work completed and accepted
Payment	Percent of lump sum price based on Schedule of Values
Schedule of Payment	Completion of Work – 100%
All labor, equipment, tools and materials to install temporary by-pass piping, saw cutting, excavation, backfill compaction, joining of pipe, bypass fittings, valves and hydrants, connecting to existing hydrants, tapping existing water mains with cut-in tees or tapping sleeves and valves, plates, ramping material, cold patch for ramping, burying bypass pipe as required, flushing, chlorinating, neutralizing chlorine residual, providing and removing temporary blow-off/sample lines, sampling, performing analysis of water quality, delivery of samples, water quality analysis in accordance with the latest revision of AWWA C651 - Disinfecting Water Mains by qualified laboratory, providing analysis results to the Engineer and Owner, delivery of notification, scheduling service connections with property owner, service connections, providing wye connections for all sillcocks, loam and seed, resetting curbing, sidewalk restoration, temporary and permanent patching of bypass trenches with hot mix asphalt, and all other incidentals necessary to install temporary by-pass piping complete in place.	

ITEM 10a, 10b 4' Diameter Air Release Manhole & Cleanout Manhole	
Measurement	Actual Manholes furnished and installed
Payment	Unit Price Each
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work for furnishing and installing the air release manhole or cleanout manhole regardless of depth including, anti-floatation slab, pipe connections, valves, fixtures, fittings, seals, field coring, geotextile fabrics, coatings, joint sealant, unclassified excavations, bedding, dewatering, backfill, gravel roadway base, backfill compaction and material testing, removal and off-site disposal of bituminous concrete pavement and excess soils and other incidental Work, as shown on the Drawings and as specified.	

ITEM 11 Test Pits	
Measurement	Each
Payment	Unit Price per EA
Schedule of Payment	Monthly Based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work to perform exploratory test, including excavation, removal, and disposal of the soil and replacement as necessary with Suitable backfill material as directed by Engineer and other incidental Work, as shown on the Drawings and as specified.	

ITEM 12 12" SDR-25 PVC Drain Pipe	
Measurement	Along the horizontal projection of the centerline of the pipe, measured from (1) inside face of manhole to inside face of manhole or (2) inside face of manhole to center of coupling.
Payment	Unit Price per set
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work for furnishing and installing the drainage pipe, pipe connections, pipe bends, rubber sleeve connections and mortar sealing of pipe and structure, flow barriers, bedding, backfill, gravel roadway base, backfill compaction and material testing, re-connection to existing pipe (including field and shop coring of new penetrations and plugging abandoned penetrations), provision & reconfiguration of brick invert of new & existing manholes, geotextile fabric, removal and off-site disposal of old drainage pipe, capping and abandonment of old drainage pipe, removal and offsite disposal of bituminous concrete pavement, concrete and excess soils, and other incidental Work, as shown on the Drawings and as specified.	

ITEM 13 Frame and Cover	
Measurement	Set installed
Payment	Unit Price per set
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work for furnishing and installing the catch basin frame and grate, including brick & mortar, concrete grade rings to raise frame to grade, concrete collars and other incidental Work, as shown on the Drawings and as specified.	

ITEM 14a, 14b 4" C900 Force main , 4" HDPE Welded Force main	
Measurement	As measured along the horizontal projection of the centerline of the pipe, measured from and to face of sewer pipe fittings and valves.
Payment	Unit Price per Linear Foot
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work to furnish and install sewer force main including clearing and grubbing, saw cutting, excavation, removing and disposing of excess material, removing and disposing of existing concrete encasement, shoring/bracing, dewatering, removing and disposing existing pipe, valves and appurtenances, support of existing utilities, restraining thrust with rods and/or concrete, joint restraints, fittings, pipe bedding, blanket and backfill, gravel roadway base, geotextile fabric, compaction & testing, crossing utilities, support of existing utilities, flushing, testing, tree trimming, removing and replacing signs, fences and mail boxes, replacement of bituminous and concrete curbing, and other incidental Work, as shown on the Drawings and as specified or required by field conditions.	

ITEM 15 1.25" Force main (Service)	
Measurement	As measured along the horizontal projection of the centerline of the pipe, measured from and to face of sewer pipe.
Payment	Unit Price per Linear Foot
Schedule of Payment	Monthly based on work completed
All labor, tools, equipment and materials to furnish and install service tubing, saw cutting, excavation, shoring/bracing, disposing of existing service piping, sand bedding and blanket, backfill, compaction crossing of underground utilities, support of existing utilities as specified, loam and seed, tree trimming, removing and replacing signs, fences, and mailboxes, removing and resetting granite and bituminous curbs, removing and resetting sidewalk, removing and resetting guard rails, and all other incidentals necessary to furnish and install water service fittings, complete in place, as specified, shown on the Drawings or required by field conditions.	

ITEM 16 Sewer Corporation valve and box	
Measurement	Units installed complete in place
Payment	Unit Price per Each
Schedule of Payment	Monthly based on work completed
<p>All labor, equipment, tools, and materials to furnish and install corporation, valve, and saddles, couplings, unions, clearing and grubbing, saw cutting, excavation, shoring/bracing, removing and disposing of excess material, tapping pipe, connecting to existing service, crossing of underground utilities, support of existing utilities as specified in the bid documents, sand bedding and blanket, gravel roadway base, backfill, compaction, loam and seed, tree trimming, removing and replacing signs, fences, and mailboxes, removing and resetting granite and bituminous curbs, removing and resetting guard rails, and all other incidentals necessary to furnish and install water service fittings, complete in place, as specified, shown on the Drawings or required by field conditions.</p>	

ITEM 17 4" Gate Valve and Box (Sewer)	
Measurement	Units installed complete in place
Payment	Unit Price per Each
Schedule of Payment	Monthly based on work completed
<p>Material and equipment, services, installation, construction and testing inherent to the Work to furnish and install valves and valve boxes, cutting valves into mains, verifying outside diameter of existing pipe, clearing and grubbing, saw cutting, excavation, removing and disposing of excess materials, shoring/bracing, dewatering, cutting valves in to existing pipe, removing and disposing existing pipe, valves and appurtenances, plugging and capping, valve installation, restraining thrust with rods, fittings or concrete thrust blocks, blocking for support of valve, bedding, backfill and compaction, gravel roadway base, geotextile fabric, wax tape, crossing of underground utilities, support of existing utilities, tree trimming, removing and replacing signs, fences and mail boxes, resurfacing gravel surfaces, and other incidental Work, as shown on the Drawings and as specified or required by field conditions.</p>	

ITEM 18 Connection to Existing Sewer Manhole	
Measurement	Units installed complete in place
Payment	Unit Price per Each
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work for coring, furnishing and installing connections to existing sewer manholes regardless of depth including, pipe connections, rubber boots, field coring, geotextile fabrics, internal drops, reforming of base and shelf, joint sealant, unclassified excavations, bedding, dewatering, backfill, gravel roadway base, backfill compaction and material testing, removal and off-Site disposal of core and pipe, removal and off-site disposal of bituminous concrete pavement and excess soils and other incidental Work, as shown on the Drawings and as specified.	

ITEM 19a, 19b Temporary Trench Pavement (4" Binder)/Misc. Hot Mix Asphalt	
Measurement	Actual temporary pavement installed at depths indicated on the Drawings
Payment	Unit Price per Ton, complete in place
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work for temporary trench pavement, including saw cutting, disposal of pavement, gravel for pavement sub-base to depth shown on the Drawings, grading, fine grading and compacting gravel for pavement sub-base, emulsion, bituminous tack coat, adjusting of roadway castings, placement and compaction of binder course to depths shown on the Drawings and in required lift depths, restoring pavement markings and other incidental Work, as shown on the Drawings and as specified.	

ITEM 20 Permanent Trench Mill & Overlay Top Course– 2”	
Measurement	Actual permanent pavement installed at depths indicated on the Drawings
Payment	Unit Price per SY
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work for 2” Mill and Overlay, including saw cutting, disposal of pavement, mill to depth shown on the Drawings, emulsion, bituminous tack coat, adjusting of roadway castings, placement and compaction of binder course to depths shown on the Drawings and in required lift depths, restoring pavement markings and other incidental Work, as shown on the Drawings and as specified.	

ITEM 21a, 21b Rock Removal/ Rock Removal Adjustment	
Measurement	Per cubic yard measured in place prior to excavation within pay limits
Payment	Unit Price per CY
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work to remove rock and boulders, including excavation, removal, and disposal of the rock and replacement as necessary with suitable backfill material as directed by Engineer and other incidental Work, as shown on the Drawings and as specified.	
Item 13b: Adjustment +/- to the set unit price value for rock removal.	

ITEM 22 Erosion Control	
Measurement	Lump Sum
Payment	Lump Sum based on percentage of work completed
Schedule of Payment	1. 50% @ Project Commencement and acceptance by the Conservation Commission & Engineer 2. 50% at Final Completion
Material and equipment, services, installation, construction inherent to the Work to install and maintain erosion controls as noted on the plan and as outlined in the Order of Conditions for the Project including removal and replacement as directed by the Engineer and other incidental Work, as shown on the Drawings and as specified.	

ITEM 23 Concrete Encasement	
Measurement	Along the horizontal projection of the centerline of the pipe, measured from the start of the encasement to the end of encasement.
Payment	Unit Price per linear foot
Schedule of Payment	Monthly based on work completed
Material and equipment, services, installation, construction and testing inherent to the Work for furnishing and installing concrete encasement of pipe, formwork, bedding, material testing, removal and off-site disposal of concrete and excess soils, and other incidental Work, as shown on the Drawings and as specified.	

ITEM 24 Loam & Seed	
Measurement	Square Yard
Payment	Monthly based on work completed
Schedule of Payment	Completion of Work – 100%
Material and equipment, services, installation, coordination & construction inherent to the Work to loam and seed disturbed areas as required to complete the work as shown on drawings and as specified.	

Item 25 Project Closeout	
Measurement	As determined
Payment	Lump sum price per Schedule of Values
Schedule of Payment	Completion of Work – 100%
Includes all labor, services, material and equipment associated with preparing Conformed to Construction Record Drawings and other related items as specified in the General Requirements.	

ITEM 26 Traffic Management	
Measurement	Lump Sum
Payment	Monthly based on work completed
Schedule of Payment	Completion of Work – 100%
Material and equipment, services, installation, coordination & construction inherent to the Work to accommodate traffic as required to complete the work as shown on drawings and as specified.	

Item 27 Owner's Allowance for Police Details	
Measurement	As Utilized, Portion of Owner's Allowance
Payment	Percent not to exceed contingency amount unless authorized by Change Order
Schedule of Payment	Completion of Work – 100%
For scheduling, coordinating and payment of Police details required for the duration of the project, from project commencement to Final Completion. No markup of police detail fees will be allowed.	

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies temporary facilities and controls for execution of the Work put into place for use only during the period of construction, that will be removed when no longer required for construction operations and applies to all Specifications and Drawings.

1. In certain paragraphs, checked items indicate requirements applicable to the Project.
2. Provisions of this Section may be supplemented in the or other sections of Division 01.

B. Section Includes

1.02 TEMPORARY CONSTRUCTION FACILITIES

Barriers
Protection of Work
Security
Safety Facilities
Access Roads
Parking
Field Offices
Staging Area
Project Identification
Progress Cleaning and Waste Removal

1.03 TEMPORARY UTILITIES

1.04 TEMPORARY CONTROLS

Dust Control
Water Controls and Dewatering
Erosion and Sediment Control
Noise Control
Pollution Control
Traffic Regulation

1.05 REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS

1.02 TEMPORARY CONSTRUCTION FACILITIES

A. Barriers

1. Comply with the requirements of Paragraph 6.11. of the Standard General Conditions and Supplementary Conditions, if any.

2. Furnish barriers to prevent unauthorized entry to and clear delineation of construction areas, to allow for OWNER's use of Site, and to protect existing facilities and adjacent properties from damage from construction operations as recommended by OSHA and as otherwise required for the protection of life and property during construction.
3. Construct barricades and protective facilities in accordance with local and state regulations. Furnish and install signs, lights, reflectors, and such protection facilities as may be required.
4. Furnish barricades required by governing authorities for public rights of way.
5. Provide protection for plant life designated to remain. Replace damaged plant life.
6. Protect non-owned vehicular traffic, stored materials, Site and structures from damage.
7. If required, furnish commercial grade, minimum 8-foot-high chain link fence around construction Site. Equip with vehicular gates with locks.

B. Protection of Work

1. Protect Work during working and non-working hours.
2. Provide special protection where specified in Specifications or Drawings and in accordance with manufacturer recommendations.
3. Furnish temporary and removable protection for installed equipment and material. Control activity in immediate Work area to minimize damage.
4. Protect exterior areas of Work from damage. Prohibit traffic from landscaped areas.
5. Buildings and Enclosures
 - a. Furnish protective coverings at walls, projections, jambs, sills, and soffits of openings and protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
 - b. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
6. Whenever gale or high winds are forecast, take measures to secure loose material, equipment or other items that could be blown and be damaged or cause damage. Do not leave such loose items unsecured at end of a working day. Attention shall be taken with scaffolding and items placed or stored on roofs or within a structure prior to being enclosed.
7. Provide for removal of snow and ice which may impede Work, damage the finishes or materials be detrimental to workers, or impede trucking, delivery, or moving of materials at the Site, or prevent adequate drainage of the Site or adjoining areas.

C. Security

1. Provide protection to stored items, the Work and OWNER's operations from unauthorized entry, vandalism, or theft, and against fire, storms and other losses during working and non-working hours.
2. Coordinate with OWNER's security program.

D. Safety Facilities

1. Provide first aid and other safety facilities required by Laws and Regulations during working and non-working hours.

E. Access Roads

1. Provide for emergency access and maintain throughout the Work Site.

F. Parking

1. Do not allow construction vehicle parking on existing pavement or sidewalks.
2. Off-Site construction parking area to be established at a location determined by CONTRACTOR.

G. Staging Area

OWNER is not providing a location for staging area. Determine and secure a location for staging area.

H. Project Identification

1. Order Of Conditions Posting: in accordance with Order of Conditions and placed at each street will work will be performed.

I. Progress Cleaning and Waste Removal

1. Comply with the requirements of Paragraph 6.11. B and C of the Standard General Conditions and Supplementary Conditions, if any.
2. Maintain areas free of waste materials, debris, and rubbish and maintain the Site in a clean and orderly condition.
3. Remove debris and rubbish from spaces and other closed or remote spaces before enclosing the space.
4. Collect and remove waste materials, debris, and rubbish from Site at least weekly and legally dispose off-Site.

1.03 TEMPORARY UTILITIES

- A. Telephone service and internet
 - 1. Provide one Apple iPhone (latest version) cellular smartphone for Owner's Representative/Engineer including computer-accessible internet service and camera for the full duration of the project.
- B. Furnish and maintain required sanitary facilities and enclosures. Do not use existing facilities.
- C. Furnish lighting for construction operations. Furnish lighting for exterior staging and storage areas and for security purposes. Maintain lighting and provide routine repairs.
- D. Furnish heat devices and heat and cooling devices as required to maintain specified conditions for construction operations.
- E. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- F. Fire Protection
 - 1. Provide temporary fire protection equipment and services during construction per NFPA and local fire code and regulations, and fire marshal's requirements.
 - 2. Use Work procedures that minimize fire hazards to the extent practicable and materials that are fire resistant where possible. Collect and remove combustible debris and waste materials from the Site each day. Store fuels, solvents, and other volatile or flammable materials away from the construction and storage areas in well-marked, safe containers in accordance with Laws and Regulations.
- G. Furnish temporary potable water bypass where necessary to ensure uninterrupted potable and fire water service to residents within the work zone. Temporary water shutdowns must be requested and only allowed if necessary, temporary water shutdowns will not be allowed for ease of construction. It should be assumed only one temporary water shut down will be allowed at each work location to complete the scope of work.

1.04 TEMPORARY CONTROLS

- A. Dust Control: Execute Work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere. Utilize the application of sprinkled water to reduce the emission of air-borne soil particulates from the Project Site.
- B. Water Control and Dewatering

Grade Site to drain away from excavations to approved drainage collection facilities. Ensure collected surface drainage water meets permitted criteria for sediment content prior to discharge.

 - 1. Maintain excavations free of water. Furnish, operate and maintain pumping equipment.
 - 2. Dewater excavations and legally dispose of water in a manner that will not cause injury to public and private property.

3. Protect Site from puddling, ponding or running water.
4. Design, furnish, install, maintain, operate and remove temporary dewatering systems as required to lower and control water levels and hydrostatic pressures in excavations during construction; legally dispose of pumped water; construct, maintain, observe and, except where indicated or required to remain in place, remove dewatering equipment and system at the completion of construction.
 - a. Dewatering may include: lowering the water table, intercepting and collecting seepage which may penetrate the support of excavation, slopes or bottom of the excavation; increasing the stability of excavated slopes; preventing loss of material from beneath the slopes or bottom of the excavation; reducing lateral loads on sheeting and bracing; limiting horizontal displacements and stresses in support of excavation to tolerable and allowable levels; preventing displacements of existing structures, utilities, pavements, and sidewalks; improving the excavation and hauling characteristics of sandy soil; preventing rupture or heaving of the bottom of any excavation; and disposing of pumped water.
 - b. *Normal dewatering* is defined as using conventional pumps installed in open excavations, ditches, or sumps to control water and allow for installation of the pipe in a dry trench.
 - c. *Special dewatering* is defined as installing well points, deep wells, ejector systems to control groundwater and hydrostatic pressures to allow for installation of the work. Special dewatering includes design of the dewatering system by a Professional ENGINEER currently registered in the state where the Project is located in good standing and conducting additional borings or subsurface explorations deemed necessary by the CONTRACTOR, and approved by the ENGINEER, to support design.
 - 1) For Special Dewatering, retain the services of a Professional ENGINEER currently registered in the state where the Project is located in good standing, experienced in design of dewatering systems, to independently evaluate the boring logs and other soils information available to determine those areas that will require special dewatering techniques and to design the required system. If, in the opinion of the CONTRACTOR or CONTRACTOR's Dewatering Professional ENGINEER, additional borings are needed to design special dewatering systems or determine areas where special dewatering techniques will be required, the CONTRACTOR shall retain and pay for the services of a boring SUBCONTRACTOR. CONTRACTOR's Dewatering Professional ENGINEER shall provide sufficient on-Site inspection and supervision to assure that the dewatering is carried out in accordance with the approved design.
 - d. Design a dewatering system capable of:
 - 1) effectively reducing the hydrostatic pressure and lowering the groundwater levels to a minimum of 2 feet below excavation subgrade in the existing fills and any organic peat, and below the excavation subgrade in the existing organic silts/clays unless otherwise directed by the ENGINEER, so that all excavation bottoms are firm and dry;

- 2) maintaining a dry and stable subgrade until the structures, pipes, appurtenances, and drainage pipe and structure bedding to be built therein have been completed to the extent that structures, pipes, and appurtenances will not be floated or otherwise damaged;
- 3) lowering of the groundwater level within the work area without adversely affecting existing structures, utilities, pavements, sidewalks or wells outside of the Work area.

5. Dewatering Operations and Procedures

- a. Provide electrically operated dewatering equipment, powered with dedicated generators adequately sized to operate the dewatering system and capable of running on commercial power. Provide standby equipment independent of commercial power and provide for dewatering within 24 hours upon primary pump or power failure. No work shall be performed by the CONTRACTOR below the pre-construction groundwater level during dewatering system failure.
- b. Provide suitable temporary pipes, flumes or channels for water that may flow along or across the Site of the Work.
- c. Provide dewatering equipment with noise attenuation systems capable of meeting the governing noise regulation requirements.
- d. Encapsulate the suction end of the pump with crushed stone, filter fabric, and other materials to minimize the amount of silt discharged to the amount allowed by the construction dewatering permit.
- e. Do not operate equipment on paved surfaces to prevent damaging these surfaces.
- f. Locate dewatering facilities to prevent interference with utilities and construction work to be done by others.
- g. For dewatering operations with relatively minor flows, direct pump discharges using filtration bag or system per Erosion and Sediment Control below, or pump into hay bale sedimentation traps lined with filter fabric. Filter water through the hay bales and filter fabric prior to seepage into storm drainage or any natural water course.
- h. For dewatering operations with larger flows, pump discharges into a steel dewatering/sedimentation basin. Use steel baffle plates to slow water velocities, to increase the contact time, and allow adequate settlement of sediment prior to discharge into waterways, storm drainage or discharge point allowed by the construction dewatering permit.
- i. Utilize silt sacks in catch basins when excess silt is suspended in the discharge water per Erosion and Sediment Control below.
- j. If siltation basin is used, size to effectively filter for the volume and discharge rate of water anticipated without overflow.

- k. Provide treatment necessary to prevent discharge of silty and/or contaminated ground water caused by the CONTRACTOR's operations, or any contaminated ground water that may pass from excavated surfaces and/or through the excavation support system selected by the CONTRACTOR.
 - l. Dispose of water pumped or drained from the Work in accordance with permit requirements and in a manner to prevent undue interference with other work or damage to adjacent properties, pavements and other surfaces, buildings, structures, and utilities.
 - m. Obtain necessary regulatory approvals for the disposal of dewatering flows, including, among others, approval by the Environmental Protection Agency under the National Pollutant Discharge Elimination System (NPDES) program for construction dewatering activities. Submit the completed and approved construction dewatering permit to the ENGINEER immediately upon receipt.
6. Special Dewatering
- a. Use Special Dewatering as necessary if Normal Dewatering methods are inadequate to ensure dry and stable excavation subgrade conditions.
 - b. Special Dewatering techniques may consist of one- or two-stage well point systems, deep wells, ejector type systems. Design with suitable screens to prevent pumping of fines and to address specified Work Site conditions.
 - c. In areas requiring special dewatering, lower the groundwater level to a minimum of 2 feet below the existing fill and/or organic peat subgrades or to the excavation subgrade for organic silt/clay subgrades prior to any installation and maintain that groundwater level until the excavation has been backfilled and provide monitoring by CONTRACTOR's Dewatering Professional ENGINEER to ensure conformance with the requirements herein.
 - d. Furnish materials and install at least two observation wells at each excavation area. The location of the wells shall be proposed in the field by the CONTRACTOR's Dewatering Professional ENGINEER and reviewed and approved by the ENGINEER.

C. Erosion and Sediment Control

- 1. Plan and execute construction using methods to control surface drainage from cuts and fills, from borrow and waste disposal areas and prevent erosion and sedimentation.
- 2. Submit erosion and sediment control plan to ENGINEER prior to the start of construction.
- 3. Install erosion and sediment controls in accordance with the Order of Conditions and as may be shown on the Drawings and as required by Laws and Regulations. Install additional erosion and sedimentation control measures beyond those shown on the Drawings as necessary to stabilize the Site. Coordinate temporary erosion controls with permanent erosion controls to the extent practical. Provide and maintain devices to control erosion, siltation, and sedimentation that occur during construction operations. Undertake reasonable precautions and measures to avoid erosion of soil and to prevent silting of drainage ditches, storm sewers, rivers, streams, and lakes.

4. Employ pollution prevention measures, erosion, and sedimentation control before, during, and after soils are exposed. Implement measures prior to soil disturbance or soil storage to the extent possible to ensure that such measures are in place before activity occurs and employ additional measures as the Work progresses. Implement and maintain as necessary until the Site is permanently stabilized.
5. Perform inspections of disturbed soil areas, material storage areas exposed to precipitation, and erosion control measures with ENGINEER a minimum of once every 14 days and also within 24 hours after any storm event greater than 0.5-inches of rainfall. Immediately correct deficiencies in the erosion control measures identified or indicated by failures or erosion by implementing additional measures or different techniques to correct and prevent subsequent erosion at no additional cost to OWNER.
6. If silt or debris breaches erosion control, immediately remove and clean silt or debris from drainage ditches and storm sewers and revise erosion control measures as required by the Conservation Commission or the ENGINEER. Should silt or debris breach erosion controls and reach rivers, streams, or lakes, immediately notify local, state, or Federal representatives as required and implement required remediation methods at no additional cost to OWNER.
7. Limit duration of the exposure of soils on embankments, excavations, and graded areas to a minimum.
8. Provide temporary measures such as berms, dikes and drains to prevent water flow. Install erosion control measures in any ditch, swale or channel before water can flow in the waterway. Handle water pumped from trenches to minimize discharge of silty water to the maximum extent practicable.
9. Stabilize storm drain outfalls as shown on the Drawings before the discharge points become operational. Install inlet protection immediately upon construction of culverts.
10. Stabilize disturbed areas with temporary and permanent erosion control practices as soon as practicable, but no more than 14 days after construction activity on a particular portion of the Site has temporarily or permanently ceased. Exceptions to this time requirement include: a) where construction activities will resume on the particular portion of the Site within 21 days; and b) where snow cover delays initiation of stabilization measures.
11. Place stockpiled topsoil on the Site away from natural drainages, in piles with side slopes of 50 percent to 70 percent. Install siltation fence around the base of the pile to prevent eroding soil from washing into drainages. Cover topsoil piles which are to remain for a period of 21 days or more with temporary seed and mulch immediately following stockpiling.
12. Conduct pavement sweeping to remove sediment and soil debris accumulation on pavement resulting from construction activity
 - 1) Installed height: minimum 2.5 feet and 36 inches maximum.
 - 2) Inspect frequently; repair or replace any damaged sections.
15. Seeding

- a. Select seed variety and applied rates based upon the date of application per the following table. Equivalent seed mixture based on suitability for use in controlling erosion of the various soil types and slopes may be used as approved by the ENGINEER.

Dates	Seed	Applied Rate (pounds per 1,000 feet ²)
4/1 to 7/1 8/15 to 9/15	Oats	1.8
4/1 to 7/1	Annual Ryegrass	0.9
5/15 to 8/15	Sudangrass	0.9
9/15 to 10/15	Winter Ryegrass	2.6

- 1) Sow seed at the rates indicated, on the pure live seed basis.
 - 2) Mulch areas where temporary seeding has been applied. Do not mulch seeded areas where matting will be immediately installed. If temporary seeding does not achieve adequate growth by November 1, apply an additional layer of mulch.
 - 3) Mulch temporarily or permanently seeded areas, areas which cannot be seeded within the recommended seeding dates, and any soil stockpile areas, immediately following seeding. Straw or hay mulch, wood fiber mulch, and hydromulch are recommended.
16. Sod: grown from certified seed of adapted varieties to produce high quality sod free of any serious thatch, weeds, insects, diseases, and other pest problem, be at least one year old and not older than three years and cut with a 1/2 inch to 1-inch layer of soil.
- a. Lay sod strips on the prepared soil, perpendicular to the slope or direction of water flow, starting at the lowest elevation. Butt the edges and ends of the sod strips together and tamp or roll. Stagger joints.
 - b. Staple sod strips at ends and at 3-foot intervals along the center of the strip.
 - c. Irrigate sodded area immediately after installation.

17. Catch Basin Silt Sacks

- a. Style: Silt Sack Regular Flow.
- b. Test Method: ASTM D-4884 165.0 lbs./inch.
- c. Silt sack seams: certified average wide width strength.
- d. Meet the following ASTM D-4884 standards. Properties are Minimum Average Roll Values (MARV).

Property	Test Method	Units	Test Results
Grab Tensile	ASTM D-4632	lbs.	315x300

Grab Elongation	ASTM D-4632	%	15x15
Puncture	ASTM D-4833	lbs.	125
Mullen Burst	ASTM D-3786	psi	650
Trapezoid Tear	ASTM D-4533	lbs.	120x150
UV Resistance	ASTM D-4355	%	90
Apparent Opening	ASTM D-4751	US Sieve	40
Flow Rate	ASTM D-4491	gal/min/ft 2	40
Permittivity	ASTM D-4491	sec -1	0.55

- 1) Utilize silt sacks in catch basins as required when excess silt is suspended in discharge water.

18. Filtration Bag or System for Discharge from Excavation Dewatering

- a. Meet the following standards. Properties are Minimum Average Roll Values (MARV).

Property	Test Method	Units	Test Results
Flow Rate	ASTM D-4491	gal/min/ft 2	40
Permittivity	ASTM D-4491	sec -1	0.55

- b. For discharge from excavation dewatering, install filtration bag or system or dewatering siltation basin constructed of a hay bale barrier lined with filter fabric sized to handle the volume of dewatering without overflowing.

19. Compost Filter Socks

- a. Furnish and install biodegradable mesh “socks” filled with mature, clean compost per EPA National Pollutant Discharge Elimination System (NPDES) specifications.

- 1) Install per EPA and manufacturers recommendations.
- 2) Install parallel to contours where possible. Stake socks as needed to stabilize. Inspect frequently and repair, as necessary.
- 3) Install in accordance with the Order of Conditions.

20. Provide detention basins or water filtration systems for dewatering and coordinate locations with ENGINEER. See Dewatering in Paragraph B. above.

21. Other Temporary Measures

- a. Provide and maintain temporary slope drains as required.
- b. Employ other temporary erosion control measures as directed by the ENGINEER or local Conservation Commission.

22. Maintenance

- a. Inspect erosion control practices immediately after each rainfall and at least daily during prolonged rainfall or snowmelt for damage. Make appropriate repairs or replacement until Final Completion at no additional cost to the OWNER.
- b. Remove silt from siltation fence and/or haybale when it has reached one-quarter of the bale and/or fence height, or prior to expected heavy runoff or siltation.
- c. Repair matting if any staples become loosened or raised, or if any matting becomes loose, torn, or undermined, make satisfactory repairs immediately.
- d. Maintain areas mulched or matted until Final Completion, at no additional cost to the OWNER.
- e. Maintain sediment basins by removing silt that reaches a depth of over one foot, at no additional cost to the OWNER, until Final Completion.

23. Removal of Temporary Erosion Control

- a. Remove temporary materials and devices upon completion of the Work when permanent soil stabilization has been achieved. Re-use materials in good condition if approved by ENGINEER.
 - 1) If silt socks are used, remove in paved areas, or cut open and disperse media in unpaved areas.
- b. Level and grade to preconstruction conditions and to the extent required to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.
- c. Remove siltation fences only when adequate grass growth has been established.
- d. Repair areas damaged by silt fences and hay bales to preconstruction conditions to the satisfaction of the local Conservation Commission and the ENGINEER.
- e. Remove unsuitable materials from Site and dispose of in a lawful manner.

D. Noise Control

1. Provide methods, means, and facilities to minimize noise from construction operations.
2. Provide noise attenuation systems capable of meeting the Department of Environmental Protection Division of Air Quality Control regulations governed by the following policy:

"A source of sound will be considered to be violating the Department's noise regulation (310 CMR 7.10) if the source:

- *Increases the broadband sound level by more than 10 dB(A) above ambient, or*
- *Produces a "pure tone" condition when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more.*

"These criteria are measured both at the property line and at the nearest inhabited residence. Ambient is defined as the background A-weighted sound level that is exceeded 90% of the time measured during equipment operating hours. The ambient may also be established by other means with the consent of the Department."

3. Construct sound enclosures or utilize other noise reduction techniques if the equipment does not meet the noise level requirements.

E. Pollution Control

1. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

a. Water Pollution Control

- 1) Assure that sediment, debris, petroleum's, chemicals, or other contaminants will not enter existing drainage facilities and channels. Use construction methods that will prevent entrance of pollutants and wastes into existing streams, rivers, lakes, and flowing and dry watercourses.
- 2) Obtain legal disposal sites and dispose of pollutants and wastes in a legal manner.
- 3) Respond immediately to emergencies as directed when water quality of existing streams, rivers, lakes and flowing and dry watercourses is threatened. Take corrective action to remove or contain pollutants until a permanent solution is determined.

b. Air Pollution Control

- 1) Equipment and vehicles that exhibit excessive exhausts emissions due to poor engine adjustments or inefficient operation will not be permitted to operate until corrective repairs or adjustments are made.
- 2) Burning of materials from clearing or grubbing operations, combustible construction materials, and rubbish will not be allowed.

F. Traffic Regulation

1. Control and maintain traffic within the Project area.
 - a. A traffic control plan is required for parts of the Project.
2. Provide and maintain traffic control and maintenance devices in accordance with Part 6, Temporary Traffic Control, of the "Manual on Uniform Traffic Control Devices for Streets and Highways", published by the U.S. Department of Transportation, Federal Highway Administration and other applicable codes and standards as specified. Operate devices 24 hours per day as required.

3. Provide for access by emergency vehicles, such as police, fire, and disaster units at all times. CONTRACTOR shall be liable for damages resulting from failure to provide such access.
4. During construction hours, traffic flow must be controlled by uniformed traffic police officers or other traffic controllers allowed by Laws and Regulations. The services of traffic controllers shall in no way relieve the CONTRACTOR of its responsibilities under the Contract.
5. Maintain minimum of one moving lane on roadways at all times.
 - a. Where detours are permitted, provide necessary barricades, flashers, flashing arrows and signs in accordance with referenced Manuals and Laws and Regulations.
 - b. Provide gravel borrow and bituminous concrete to maintain temporary passable travel lane ramps, temporary bridging, steel plates, temporary pavement, wood-framed walkways, caution, safety, and other necessary signs directing the pedestrian and vehicular traffic towards unblocked and safe areas.
6. Provide safe access/egress to businesses and abutting property OWNERS within the Project area. In areas where the construction activity is in progress, install directional signs in front of businesses indicating "OPEN FOR BUSINESS" or similar for guidance of customers.
 - a. Certain construction operations such as utility work and roadway/sidewalk reconstruction may restrict access/egress on some roads and to businesses and abutting property OWNERS. Under these circumstances, schedule operations during off-peak hours or late evenings with OWNER approval so that a particular work activity can be completed in the shortest possible time.
 - b. Provide 48 hours' notice to businesses and abutting property OWNERS when access/egress will not be available, or restrictions will exist.
7. Exercise particular care to establish and maintain such methods and procedures that will not create hazards.
 - a. Remove or properly cover traffic control, safety devices and/or signs having messages that are irrelevant to normal traffic conditions at the end of each Work period. Keep signs clean at all times and provide that legends are distinctive and unmarred.
 - b. Place excavated material and construction equipment so that vehicular and pedestrian traffic is maintained at all times unless road closure permit is obtained. If the CONTRACTOR's operations cause traffic hazards, implement appropriate safety measures immediately.
 - c. In areas of high pedestrian and vehicular traffic volume, the remove waste materials and construction equipment from the Work Site on a daily basis. Do not park construction equipment overnight on the Site or the adjacent roads unless permitted by OWNER.
 - d. Provide night watchmen where special hazards exist.

8. Post signage clearly stating that any vehicle impeding the progress of construction will be towed at the vehicle OWNER's expense. Towing charges incurred by OWNER for CONTRACTOR's failure to post such signs will be borne by the CONTRACTOR.

1.05 REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, and facilities before Final Application for Payment inspection.
- B. Remove temporary underground installations and grade Site as indicated. Clean and repair damage caused by installation or use of temporary utilities, facilities, and controls.
- C. Restore existing facilities and areas used during construction to original condition. Restore permanent facilities used during construction to specified condition.

END OF SECTION

SECTION 01 51 38

TEMPORARY WATER BYPASS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide, test, operate and maintain temporary bypass water mains as required and approved, including service connections, main cut-in's, tap holes and temporary hydrants to prevent ANY interruption of water service or fire protection during water main construction or bypass installation/removal.
2. CONTRACTOR to field determine temporary water bypass, OWNER and ENGINEER have not pre-determined layout.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American National Standards Institute (ANSI)
 - a. ANSI/NSF 61, Drinking Water System Components – Health Effects
2. American Water Works Association (AWWA)
 - a. AWWA C651
3. ASTM International (ASTM)
 - a. ASTM A135
 - b. ASTM D1248
 - c. ASTM D3350
4. Factory Mutual (FM)
5. NSF International (NSF)
6. Underwriters Laboratories Inc. (UL)

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: in accordance with Division 01 General Requirements.

1.05 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.
 - 1. Submit a plan and schedule of the proposed temporary bypass of water main system including any alterations, at least 14 days prior to implementation and prior to the start of construction.
 - 2. Minimum contents of water bypass pumping plan and schedule:
 - a. Plan showing the layout of temporary water mains including: connections to existing hydrants, taps to existing water mains and fire services, street crossings, existing water main valves to be operated, and location of temporary hydrants, valves, and sampling locations
 - b. Description of connection procedures for domestic services, details, and a description of installation procedures for tap hole connections to existing mains and fire services, and disinfection procedures.
 - c. Daily schedule outlining the locations where temporary water mains will be installed and notification procedures for business owners and residents.
 - d. List of spare parts for maintenance and repairs to temporary bypass and service connections with location where the spare parts will be stored.
 - 3. An emergency contact list with a minimum of 3 employees skilled in the maintenance and repair of the temporary by-pass systems, knowledgeable of the bypass system in use, with specific knowledge of its operational requirements and valve location, and who are available 24 hours per day/ 7 days per week, and able to respond to emergency repair calls within a maximum of 2 hours. Include at a minimum name, address, home, and mobile telephone number for each employee listed.
 - 4. Connection/disconnection written notice to residents.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements

1.07 SITE CONDITIONS

- A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 TEMPORARY BYPASS WATER MAIN

- A. Temporary bypass water main pipe and fittings

1. High density polyethylene (HDPE) pipe: manufactured from high density, extra high molecular weight compound equaling a PE 3408 designation and conforming to ASTM D1248 and ASTM D3350, with a cell classification of 345434C.

OR

1. Hot dipped galvanized schedule 40 steel pipe: manufactured to meet the requirements of ASTM A135, UL listed, FM approved.
 2. Do not use any other pipe materials in the temporary bypass water main system.
- B. Minimum working pressure: 150 psi and capable of withstanding vehicular traffic loading.
- C. Minimum wall thickness for HDPE pipe
1. 6-inch pipe: 0.602 inches.
 2. 2-inch pipe: 0.216 inches.
- D. Temporary pipe couplings: restrained joint, designed to resist flexure and torsion loads, UL listed, FM approved with a minimum working pressure of 750 psi. Gaskets: ANSI/NSF 61 approved for use with potable water.

2.02 TEMPORARY WATER SERVICE CONNECTIONS

- A. Temporary water service connections: minimum 3/4-inch polyethylene or rubber hose tubing complying with ANSI/NSF 61 and approved by Owner prior to installation.

2.03 TEMPORARY HYDRANTS AND GATES

- A. Temporary hydrants: acceptable to and supported by a means approved by the local Fire Department to prevent deflection of the hydrant or bypass piping system when the hydrant is in operation.
- B. Provide temporary gate valves that are in good working order and capable of sealing completely when closed.

PART 3 – EXECUTION

3.01 GENERAL

- A. Notify OWNER & RESIDENTS/USERS of shut downs 72 hours in advance of any water service interruptions. Notifications shall include a 24-hour phone number for CONTRACTOR emergency response.
- B. Develop minimum required temporary bypass water mains for approval by Engineer and Owner prior to beginning any Work on the Project.
- C. Do not interrupt water service or fire protection during water main construction or bypass installation/removal.

1. Connect temporary bypass water mains to the existing distribution system at both ends to maintain continuity in the distribution system. Do not “dead-end” bypass system unless approved by Owner.
 2. Take necessary measures, including tapping existing water mains and installing gate valves when existing hydrants and existing gate valves are unavailable for use, to ensure continuous water service and fire protection.
- D. Furnish, install, maintain, and remove service hoses or pipes of approved size, to service consumers from gated connections on the bypass pipe.
- E. Provide separate temporary water connection for each building. Directly connecting one building to another is prohibited.
- F. Furnish and install temporary bypass water main, temporary hydrants, temporary in-line gate valves, temporary house service connections, temporary service blow backs and permanent gate valves prior to water main replacement construction. Install temporary bypass water mains as indicated on the Drawings unless otherwise approved or directed by Owner. Provide for fire flow interconnections and water service connections to all businesses and residents affected by the Work.
1. Install temporary hydrants, at a minimum, adjacent to existing hydrants. Provide additional temporary hydrants when required by the local Fire Department at no additional cost to Owner.
 2. Provide temporary gate valves that are good working order and seal completely when closed. Locate gate valves where shown on the Drawings or as indicated by Engineer or Owner. If a bypass plan has not been included on the Drawings, at a minimum install gate valves at hydrant connections, tap hole connections and branch lines. Provide additional temporary gate valves when directed by Engineer at no additional cost to Owner. Install gate valves at hydrant connections after the temporary hydrant to ensure temporary hydrant remains live if this gate is closed.
- G. Supply bypass pipes from connections made to hydrants or existing water mains that are to remain in service. Furnish fittings and make necessary connections required to supply water to the bypass pipes (including services), including approved corporation stops, tapping sleeves, tap holes, bulkheads, and plugs at dead end mains.
- H. Provide minimum inconvenience to property owners during connection and disconnection. Coordinate with and contact property owners by written notice at least 48 hours in advance of performing connections and disconnections. Submit notice to Owner for approval prior to distributing to property owners.
- I. Supply water to homes and businesses (all affected users of water system) continually during underground main shut down.

3.02 PIPING

- A. Provide adequate water tightness. Exercise care throughout installation of temporary mains and service connections to avoid possible contamination of water mains or house services or contamination of the temporary bypass pipe itself. Flush and disinfect temporary mains and services to prevent contamination in accordance with AWWA C651. Provide laboratory sample confirmation of bypass acceptability to Owner.
- B. Lay temporary piping along the general lines of streets or roadways to cause minimum disruption and avoid damage. Unless otherwise directed, ramp 4-inch or smaller bypass piping with temporary bituminous pavement, cold patch, or other approved material on each side of the pipe at driveways and sidewalks. Bury bypass piping greater than 4-inch in diameter at driveway and sidewalk crossings.
 - 1. Take additional precautions to minimize public inconvenience in areas where bypass and/or service pipe or hoses may be considered an obstruction to safe passage, including installation of additional ramping on both sides of the bypass pipe or burying the bypass pipe at building walkway entrances, at sidewalk crossings, and in other areas where the piping is considered an obstruction to safe passage.
 - 2. At street crossings, cut a narrow trench in the existing pavement sufficiently wide and deep enough to allow placement of the bypass pipe just below the roadway surface, placement temporary hot-mix asphalt surfacing above it, and compaction by approved means. Make flush with the adjacent pavement. Compaction of temporary surfacing by vehicular traffic is not allowed. Upon removal of the bypass piping, backfill trench with gravel material, properly compacted, and restore to service with a permanent hot-mix asphalt surface at no additional cost to Owner.
 - 3. CONTRACTOR shall connect to a user at all means necessary including digging and excavating at the property line or installing a temporary connection inside the residence.

3.03 OPERATION AND MAINTENANCE

- A. When the bypass water main system has been tested and is approved to be put into service, maintain 24 hours per day, 7 days per week until the Work has been completed and the bypass system has been removed.
- B. Complete sections of the Project in progress before the daily low temperature falls below 35 degrees Fahrenheit. Maintain components of bypass system impacted by freezing conditions, including service connections and take reasonable measures when scheduling Work as cold weather season approaches. Should it become necessary to stop Work and remove the bypass system due to freezing conditions, re-install, chlorinate, test, and return the temporary bypass system to service at no additional cost to Owner.

3.04 REMOVAL

- A. After the existing water mains have been replaced and new water mains put into service, remove components of the temporary bypass system immediately and perform bituminous patching required for temporary lines.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section specifies general requirements for products, materials and equipment and applies to all Specifications and Drawings.

1. Provisions of this Section may be supplemented in individual Specification sections.

- B. Section Includes

1.02 SOURCE QUALITY CONTROL

General
Independent Testing Agency Certification
Factory Testing

1.03 PRODUCT REQUIREMENTS

General
Transporting and Handling
Storage and Protection

1.04 WARRANTIES

1.02 SOURCE QUALITY CONTROL

- A. General

1. Subject material and equipment furnished under the Contract Documents to a complete factory testing program as specified.
2. Shop Drawings and submittals: reviewed by ENGINEER before initiating testing program.
3. Perform checks and tests in accordance with manufacturer's recommendations and referenced standards.
4. Evaluate test results and advise OWNER immediately of any discrepancy between test results and test limits or the failure of any device or system under test. Include test limits for acceptability applicable to each test on the certified test records.
5. Record test information, including the evaluation of testing results, on forms approved by OWNER and ENGINEER.

- B. Independent Testing Agency Certification

1. If specified, furnish certificates from an independent testing agency.

2. Independent testing agency to certify that material and equipment components have been examined and tested and are in conformance with the requirements specified in the Contract Documents.
3. Take Samples in accordance with the requirements specified in the Contract Documents, as selected by OWNER or independent testing agency. Furnish and ship at no additional cost to OWNER.

C. Factory Testing

1. Provide 14 days prior written notice of factory inspections and tests to OWNER and ENGINEER.
2. If failure to give proper written notice results in material and equipment being assembled or covered before a factory inspection or test, make material and equipment ready for inspection or test and reassemble or recover at no additional cost to OWNER.
3. OWNER may inspect any portion of material and equipment furnished at any reasonable time during manufacture and may witness testing of any portion of material and equipment wherever located. OWNER and ENGINEER to witness tests only.
4. Furnish, set up and operate test equipment and facilities.
5. If facilities for conducting required tests are unavailable to the manufacturer, conduct tests elsewhere or have them performed by an independent agency approved by OWNER.
6. Protect material and equipment after testing and checking to provide that subsequent testing of other equipment or systems does not disturb, damage, or otherwise interfere with functional capability of material and equipment.
7. Assume responsibility for protection of material and equipment and safety of all personnel during factory testing program.
8. Grounds for rejection: failure to withstand tests; failure to meet ratings; failure to meet applicable standards.
9. In the event of failure:
 - a. Submit revisions of documents requiring approval for changes required for rectification.
 - b. Obtain OWNER's and ENGINEER's approval before making such changes.
 - c. Provide written details of any changes to be made not requiring approval.
 - d. Notify OWNER and ENGINEER in writing before retesting.
 - e. Furnish new material and equipment which meets requirements of the Specifications if rejected material and equipment cannot be rectified to satisfaction of OWNER and ENGINEER.
 - f. Retest after rectification in presence of OWNER or ENGINEER.

10. Assume responsibility for all costs, including, but not limited to: loss or damage to materials and equipment resulting from testing; retesting; rectification; new material and equipment to replace damaged or non-rectifiable material and equipment; removal, furnishing, transportation, unloading, and installation of replacement material and equipment; and witness of testing by OWNER and ENGINEER including travel, lodging, meals, and payroll.
11. Submit certified test reports which define tests, list results, and are signed by CONTRACTOR's representative, and copies of raw data collected during tests. Submission of certified test reports does not relieve CONTRACTOR of responsibility for material and equipment meeting requirements of the Contract Documents after installation.

1.03 PRODUCT REQUIREMENTS

A. General

1. Products include new material and equipment incorporated into the Work and may also include existing material and equipment required for reuse. This does not include machinery and equipment used for preparation, fabrication, conveying, installation, and erection of the Work.
2. Do not use materials and equipment removed from existing Work Site, except as specifically permitted.
3. Provide complete with accessories, trim, finished, safety guards, and other devices and details needed for a complete installation and for the intended use or effect.
4. Provide standard products which have been produced and used successfully on other similar projects for similar applications. Provide products which are likely to be available to OWNER in the future for items required for maintenance and repair or replacement Work.
5. Furnish interchangeable components of the same manufacturer, for similar components.

B. Transportation and Handling

1. Transport and handle material and equipment in accordance with manufacturer's instructions.
2. Notify ENGINEER and OWNER in writing upon acceptance of a shipment.
3. Promptly inspect shipments to assure that material and equipment comply with requirements, quantities are correct, and material and equipment are undamaged.
4. Furnish equipment and personnel to handle material and equipment by methods to prevent soiling, disfigurement, or damage.
5. Uncrate equipment and dispose of packing material properly.

C. Storage and Protection

1. Store and protect material and equipment in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive material and equipment in weather tight, climate-controlled enclosures.
2. For exterior storage of fabricated material and equipment, place on sloped supports, above ground.
3. Provide for bonded off Site storage and protection when Site does not permit on Site storage or protection.
4. Cover material and equipment subject to deterioration with impervious sheet covering. Furnish ventilation to avoid condensation or potential degradation of material and equipment.
5. Store loose granular materials on solid flat surfaces in a well-drained area. Avoid mixing with foreign matter.
6. Furnish equipment and personnel to store material and equipment by methods to prevent soiling, disfigurement, or damage.
7. Arrange storage of material and equipment to permit access for inspection. Periodically inspect to assure material and equipment are undamaged and are maintained in acceptable conditions.
8. After receipt of material and equipment, assume responsibility for loss and damage including but not limited to breakage, corrosion, weather damage, and distortion.

1.04 WARRANTIES

- A. Provide warranties for equipment and material in accordance with Paragraphs 6.19 AND 14.03 of the Standard General and Supplementary Conditions, if any.
- B. Provide extended or special warranties as indicated in individual Specification sections.

END OF SECTION

SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies general execution requirements and startup/commissioning and performance testing for closeout of the Work and applies to all Specifications and Drawings.

1. In certain Paragraphs, checked items indicate requirements applicable to the Project.
2. Provisions of this Section may be supplemented in the Specific Project Requirements and Procedures or other sections of Division 01.

B. Section Includes

1.02 OVERALL EXECUTION REQUIREMENTS

Coordination
Existing Conditions
Field Engineering
Record Documents
Cutting and Patching
Electrolytic Corrosion Prevention
Quality Assurance and Control of Installation
Manufacturers' Field Services
Independent Testing

1.03 STARTUP, TESTING, AND COMMISSIONING

Spare Parts
Consumables
Checkout and Starting Systems
Starting, Adjusting, and Balancing
Startup and Commissioning/Performance Testing
Demonstration and Training

1.02 OVERALL EXECUTION REQUIREMENTS

A. Coordination

1. Conduct preconstruction and pre-installation meetings before commencing certain Work that requires coordination or has special requirements or approvals.
2. Comply with the required Work sequence and coordination as may be specified in Summary of Work and reflect in the Project scheduling.
3. Coordinate Work such that Work is completed with minimum disruption to residents and businesses.

4. Coordinate space requirements and installation of Work. Utilize spaces efficiently to maximize accessibility for other installations, maintenance, and repairs.
5. Coordinate Work of the various Specifications with interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
6. Coordinate related Work at the Site in accordance with Article 7 of the Standard General and Supplementary Conditions, if any.
7. Coordinate completion and cleanup of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for OWNER's partial occupancy.
8. After OWNER occupancy of premises, coordinate access to Site for correction of defective Work and/or incomplete Work to minimize disruption of OWNER's activities.

B. Existing Conditions

1. Paragraph 4.01 of the Standard General and Supplementary Conditions, if any, covers Availability of Lands: No information is identified or available for the Project.
2. Paragraph 4.02 of the Standard General and Supplementary Conditions, if any, covers Subsurface and Physical Conditions: No information is identified or available for the Project.
3. Pursuant to Paragraph 4.04 of the Standard General and Supplementary Conditions, if any, existence and location of Underground Facilities and other utilities and construction indicated as existing are not guaranteed. Before beginning Work investigate and verify the existence and location of Underground Facilities and other utilities and construction.
 - a. Conduct test pits and other utility research and properly restore utilities interfered with or damaged during construction at no cost to the OWNER.
 - b. Engage a professional subsurface utility locator to verify the existence and location of underground utilities prior to starting Work
4. Paragraph 4.05 of the Standard General and Supplementary Conditions, if any, covers Reference Points: No information is identified or available for the Project.
5. Paragraph 4.06 of the Standard General and Supplementary Conditions, if any, covers Hazardous Environmental Conditions at Site: No information is identified or available for the Project.

C. Field Engineering

Delete – not required for the Project.

D. Record Documents

1. Provide Record Documents in accordance with Paragraph 6.12 of the Standard General and Supplementary Conditions, if any, and in accordance with the Payment and Administrative Procedures.

2. Store Record Documents separate from documents used for construction. Record information concurrent with construction progress.
 3. Legibly mark each item to record description of actual equipment and material installed and actual construction on approved submittals, including the following.
 - a. Manufacturer's name and equipment and material model and number
 - b. Material and equipment substitutions or alternates utilized
 - c. Approved changes
 - d. Measured depths of foundations
 - e. Measured horizontal and vertical locations of Underground Facilities and appurtenances, referenced to permanent surface improvements
 - f. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work
 - g. Field changes of dimension and detail
 - h. Details not on original Contract Documents or Shop Drawings
- E. Cutting and Patching
1. Employ skilled and experienced personnel to perform cutting and patching.
 2. Submit written request in advance of cutting or alteration which affects:
 - a. structural integrity of any element of Project;
 - b. integrity of weather exposed or moisture resistant elements;
 - c. efficiency, maintenance, or safety element;
 - d. safety, traffic, or hazard barriers;
 - e. visual qualities of sight exposed elements; and
 - f. work of OWNER or separate CONTRACTOR.
 3. Execute cutting, fitting, and patching including excavation and fill to complete Work and to:
 - a. fit materials together, to integrate with other work;
 - b. uncover Work to install ill-timed Work;
 - c. remove and replace defective or non-conforming Work;

- d. remove Samples of installed Work for testing when requested; and
 - e. provide openings in element of Work for penetration of mechanical and electrical work.
4. Execute Work by methods to avoid damage to other work and which will provide appropriate surfaces to receive patching and finishing.
 5. Provide adequate temporary support for Work to be cut.
 6. Restore Work with new materials in accordance with requirements of Contract Documents. Use materials identical with original materials where recognized that satisfactory results can be produced.
 7. Provide protection from elements for areas which may be exposed by uncovering work.
 8. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit. Restore exposed finishes of patched areas; and, where necessary extend finish restoration onto retained adjoining Work in a manner, which will eliminate evidence of patching.
 9. Identify any Hazardous Waste, Hazardous Environmental Condition, or hazardous substance exposed during the Work to OWNER for decision or remedy in accordance with Paragraph 4.06 of the Standard General and Supplementary Conditions, if any.
 10. Cut work by methods least likely to damage Work to be retained and work adjoining. Cut Work with sawing and grinding tools, not with hammering, chopping, or burning tools. Cut masonry and concrete materials with masonry saw or core drill. Do not use pneumatic tools without prior approval. Core drill openings through concrete Work. Adhere to mandatory cutback requirements when saw cutting concrete and roadway openings.
 11. Do not cut and patch structural Work in a manner resulting in reduction of load-carrying capacity or load/ deflection ratio.
 12. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Maintain supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage and seal voids. For interior work at penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire resistant material, to full thickness of the penetrated element.
 13. Do not cut and patch operational or safety-related components that reduce capacities to perform in manner intended. Do not cut and patch Work that reduces visual qualities. Remove and replace unsatisfactory cutting patching as directed by ENGINEER or OWNER.

F. Electrolytic Corrosion Prevention

1. Prevent galvanic action, bimetallic corrosion, anodic or cathodic action, and electrolysis at all electrical grounds and for all galvanic scale (electromotive series or table of oxidation potentials). Do not allow contact of dissimilar metals further apart than 0.35 on the galvanic scale (electromotive series or table of oxidation potentials). The electrode potential of common metals is listed below.

	Electrode Potential Volts (Relative to Hydrogen)
Magnesium	+2.37
Aluminum	+1.70
Zinc+	+0.76
Chromium	+0.56
Iron and Steel	+0.44
Cadmium	+0.40
Nickel	+0.25
Tin	+0.14
Lead	+0.13
Copper	-0.34

2. Unless otherwise indicated, provide dielectric insulators between ferrous and nonferrous pipe and equipment.

G. Quality Assurance and Control of Installation

1. Monitor quality control of SUBCONTRACTORS, Suppliers, manufacturers, material, equipment, services, Site conditions, and workmanship, to produce Work of specified quality. Conduct field quality control and testing specified.
2. Comply fully with manufacturers' installation instructions, including each step in sequence. If manufacturers' instructions conflict with Contract Documents, request clarification from ENGINEER before proceeding.
3. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
4. Perform Work using persons qualified to produce workmanship of specified quality.
5. Install field Samples and mockups at the Site as required in Specifications for review. Acceptable Samples and mockups represent a quality level for the Work. Where field Sample or mockup is specified to be removed, clear area after field Sample or mockup has been accepted by ENGINEER or after Work is complete when mockup is to serve as a control reference.
6. Protect adjacent construction in accordance with Paragraph 6.11 of the Standard General and Supplementary Conditions, if any.

H. Manufacturers' Field Services

1. If required in the Specifications, arrange, and pay for material or equipment Suppliers or manufacturers to provide qualified staff personnel (field representative) to perform the following services and services specified. Submit reports of activities, actions taken and test results to ENGINEER within 10 days of completion.
 - a. Observe Site conditions, conditions of surfaces and installation, quality of workmanship.
 - b. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
 - c. Assist with field assembly as required.
 - d. Furnish, setup, and operate required test equipment and facilities.
 - e. Perform and record results of manufacturer recommended inspections and tests, and tests specified for material and equipment.
 - f. Be responsible for protection of material and equipment and safety of all personnel during testing.
 - g. Perform any other services normally provided by field representative's company.
 - h. Instruct operating personnel in proper use of material and equipment.
 - i. Instruct and supervise field repairs before acceptance by OWNER.
- I. Independent Testing
 1. Employ and pay for specified services of an independent firm in accordance with Paragraph 13.03 of the Standard General and Supplementary Conditions to perform inspection and testing as may be specified except where responsibility for a specific inspection or test is expressly allocated to OWNER in the Specifications or by Laws and Regulations.
 2. Reports will be submitted by the independent firm to OWNER, in duplicate indicating observations and results of tests and indicating compliance or noncompliance with Contract Documents.
 3. Inspection, testing, and source quality control may occur on or off the Project Site.
 4. Cooperate with independent firm. Furnish samples of materials, design mix, equipment, tools, storage, and assistance as requested.
 5. Notify OWNER and independent firm 24 hours before expected time for operations requiring services.
 6. Make arrangements with independent firm and pay for additional Samples and tests required for CONTRACTOR's use.
 7. Retesting required because of nonconformance to specified requirements will be performed by the same independent firm if instructed by OWNER. Payment for retesting will be charged to CONTRACTOR by deducting inspection or testing charges from the Contract Price.

8. Testing or inspecting does not relieve CONTRACTOR from performing Work in accordance with requirements of the Contract Documents.

1.03 STARTUP, TESTING, AND COMMISSIONING

A. Spare Parts

1. Provide spare parts required for construction, startup, testing and commissioning of the Work prior to achievement of Substantial Completion, including spare parts for flushing and consumable supplies such as bolts, nuts, gaskets, filters, insulating tape, etc., normally consumed in the startup, commissioning, and testing.
2. If spare parts are purchased by OWNER, CONTRACTOR shall have the right to use the spare parts purchased by OWNER provided that such spare parts are replaced prior to Substantial Completion at CONTRACTOR's expense. Replacement spare parts, replaced by CONTRACTOR, shall be new, unused, and identical as the original spare part used.

B. Consumables

1. Provide initial fills of consumables including equipment lubricants, resins, chemicals, desiccants, and fuels. Provide subsequent fills if required during Warranty Period if acts or omissions of CONTRACTOR cause such consumables to require replacement.
2. Coordinate with OWNER for consumables required.

C. Checkout and Starting Systems

1. Coordinate schedule for startup and operation of various equipment and systems with OWNER.
2. Notify OWNER 7 days before startup of each major piece of equipment or system, including a staffing request for OWNER's operations and maintenance personnel required to adequately and safely support each specific start-up and operation activity.
3. Verify that each system or piece of equipment item has been assembled, constructed, or completed in accordance with the Contract and capable of functioning as intended.
4. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, magnetic center alignment, belt tension, control sequence, or other conditions which may cause damage.
5. Verify that each piece of equipment or system has successfully completed construction testing and cold commissioning, including hydrostatic testing, loop checks, relay checks, calibration, and continuity checks and that all tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
6. Verify wiring and support components for equipment are complete and tested.

7. Execute start up under supervision of responsible manufacturers' representative or CONTRACTOR's personnel in accordance with manufacturers' instructions utilizing OWNER's qualified operations and maintenance staff trained by CONTRACTOR.
8. When specified in individual Specification Sections, require manufacturer to provide field representative to be present at Site to inspect, check and approve equipment or system installation before start up, and to supervise placing equipment or system in operation.

D. Adjusting and Balancing

1. Supply necessary equipment, material, construction power, and consumables (except for those provided by OWNER) needed to startup and fully test the Work and replenish the same until Substantial Completion is achieved. CONTRACTOR may utilize OWNER's operating spare parts, such use requiring timely replacement at CONTRACTOR's expense.
2. Coordinate as required for conduct of independent testing.
3. Perform specified and required adjusting and balancing concurrently to the maximum extent possible on individual equipment and systems and prior to startup and commissioning/performance testing.

E. Startup and Commissioning/Performance Testing

1. Conduct startup and commissioning/performance tests to demonstrate the Work meets the requirements of the Contract Documents, satisfies the OWNER's requirements, and is in accordance with Paragraph 14.04. of the Standard General and Supplementary Conditions, if any. Conduct testing in accordance with individual Specification sections.
2. Prepare and submit a written startup and commissioning/performance testing procedures no later than 60 days prior to start of testing for review and final test procedures no later than 30 days prior to start of testing. Submit a staffing request for OWNER's operations and maintenance personnel.
3. Calibrate test equipment and instrumentation on Site or provide acceptable certificate of calibration conducted within 30 days of testing.
4. Complete functional testing prior to initiating the startup and commissioning/performance testing as specified.
5. Complete specified startup and commissioning/performance tests prior to Substantial Completion. OWNER and ENGINEER will witness Performance Testing. Notify OWNER and ENGINEER in writing at least 7 days prior to starting any startup and commissioning/performance testing. Coordinate for witnessing of tests by required regulatory representatives.
6. Submit written test reports.

F. Demonstration and Training

1. Provide formal demonstration and training of OWNER's personnel as specified in individual Specification sections.

END OF SECTION

SECTION 02 82 33

REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIAL

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Work includes, but is not limited to, equipment and material, storage, transportation, legal disposal, signs, preparation, and temporary facilities required to safely remove and dispose of Asbestos Containing Materials (ACM) on Site.
2. Minimum requirements for the disturbance, removal, containment, and disposal of ACM generated as a result of the Work by a duly licensed asbestos abatement CONTRACTOR in accordance with this Section, Laws and Regulations, and applicable reference standards listed in Article 1.03.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. United States Environmental Protection Agency (USEPA) Regulation 40 CFR Part 61 National Emission Standards for Hazardous Air Pollutants (NESHAP) Paragraph 61.145, Standard for Demolition and Renovation, and Part 763, Asbestos
- B. U.S. Department of Labor; Occupational Safety and Health Act of 1970 (Particular attention is drawn to the Asbestos Regulations of 29 CFR, Part 1926.1001 General Industry Standard for Asbestos, Part 1910.134 Respirator Regulations, and Part 1910.1200 Hazard Communication Program)
- C. U.S. Department of Transportation regulations, 49 CFR Parts 171-181; Hazardous Materials Regulations
- D. Commonwealth of Massachusetts
1. 453 CMR 6.00, Current Asbestos Regulations
 2. MGL Chapter 149, Sections 6A-6G
 3. MGL Chapter 21E, Massachusetts Oil and Hazardous Material Release Prevention and Response Act
- E. Massachusetts Department of Environmental Protection (MassDEP)
1. 310 CMR 7.00, 7.09, 7.15, 19.00, 22.00, 30.00, 33.00, 40.00 and all related amendments and policy statements.
 2. Asbestos Containing Material Guidance Document, Specification 02 82 33.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.

1. Qualification Statement of licensed asbestos abatement CONTRACTOR.
2. Provide two copies of the following are submitted by the asbestos abatement CONTRACTOR at the Pre-Construction Conference.
 - a. Notifications, permits, applications, licenses, and like documents required Laws and Regulations
 - b. Copies of medical records as required by OSHA or a notarized statement by examining medical doctor that such examinations have taken place, and when, for each worker involved in ACM abatement
 - c. Record of successful respiratory fit test performed by a Competent Person as defined by OSHA, within the previous 6 months, for each worker involved in ACM abatement
 - d. Copies of current DOS license for asbestos abatement CONTRACTOR, each supervisor, and each worker involved in ACM abatement
 - e. Separate certificate of insurance from asbestos abatement CONTRACTOR naming CONTRACTOR, OWNER, and ENGINEER as additional insureds
 - f. Proposed respiratory program for workers throughout all phases of the abatement Work, including make, model, and NIOSH approval numbers of respirators to be used
 - g. Written description of procedures, methods, or equipment proposed to be utilized by asbestos abatement CONTRACTOR that differ from the Specification, including manufacturers' specifications for any equipment not specified for use in the Specification
 - h. Proposed electrical safeguards to be implemented, including but not limited to location of transformers, GFCI outlets, lighting, etc., necessary to safely perform the abatement Work, including a description of an electrical hazards safety plan for common practices in the abatement Work area
 - i. List of equipment to be used on Site, by make and model, including generator, negative air pressure equipment, HEPA vacuums, water atomizing devices, etc.
 - j. Chain of command of responsibility at the Site, including supervisors, foremen, and competent person, and contact information
 - k. Proposed emergency plan and route of egress from abatement Work areas in the event of fire or injury, including the name and telephone number of nearest medical assistance center

- l. Asbestos abatement CONTRACTOR's testing laboratory, NIOSH PAT proficiency testing results, and certification in the location of the Project
 - m. Safety Data Sheets on encapsulants, sealers, and any other potentially hazardous materials
 - n. Name and address of waste management hauler and disposal site
- 3. Provide that the following are submitted by the asbestos abatement CONTRACTOR prior to submittal the final Application for Payment.
 - a. Waste disposal receipts acknowledging legal disposal of waste material from the Project, indicating delivery date, quantity, and appropriate signature of disposal site's authorized representative
 - b. Copy of the daily entry-exit log book
 - c. Personnel monitoring and final clearance results as required by OSHA or EPA or this Section

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Obtain the services of a duly licensed asbestos abatement CONTRACTOR to identify and safely remove ACM prior to demolition of building structures and components that may be disturbed per statutory requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.
- B. Protection
 - 1. Provide for protection of workers performing Work in vicinity of ACM and the public and the environment from exposure.
- C. Obtain the services of a duly licensed or certified waste management hauler and disposal site in accordance with Laws and Regulations.

1.08 SITE CONDITIONS

- A. Existing Conditions: per Division 01 General Requirements.
 - 1. Refer to Hazardous Building Materials Inspection Report.

2. Common materials that may contain asbestos include thermal insulation on boilers, ducts and pipes, vinyl floor tiles, ceiling tiles, various mastics (i.e., glues), and asbestos cement products, including asbestos cement pipes. Some of these materials are "friable", meaning the material can easily be crumbled under hand pressure and release asbestos fibers (e.g., insulation) and some are "non-friable", meaning the material cannot easily be crumbled and cannot easily release asbestos fibers (e.g., vinyl floor tiles and asbestos cement pipes that are in good condition and have not deteriorated).

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION

3.01 ABATEMENT WORK

- A. Provide that abatement of ACM is performed by a duly licensed asbestos abatement CONTRACTOR in accordance with Laws and Regulations.
- B. Remove ACM prior to demolition or renovation activities, wetting the materials prior to removal to prevent asbestos dust, fully containing the Work area (e.g., with plastic sheeting) and drawing air out of the containment through a specially made air filtration unit with HEPA filter capable of capturing asbestos fibers, sealing the wetted asbestos-containing waste material (ACWM) in leak-tight containers with asbestos labeling, and properly disposing of the waste in a permitted landfill or disposal site.
- C. Should ACM be encountered during construction, CONTRACTOR shall remove material and keep separated from other materials to prohibit contamination.
- D. Once removed, CONTRACTOR shall dispose of materials in accordance with applicable Mass State Rules & regulations; payment for removal & disposal will be as stated in the Measurement & Payment Section 01 20 25.

END OF SECTION



Commonwealth of Massachusetts
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ASBESTOS CEMENT PIPE GUIDANCE DOCUMENT AND CONDITIONAL ENFORCEMENT DISCRETION

June 2011, amended May 22, 2015

Prepared by the Bureau of Air and Waste

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I. Background

The Massachusetts Department of Environmental Protection's (MassDEP's) asbestos regulation (310 CMR 7.15) protects public health and the environment by establishing safe handling practices for demolishing or renovating buildings and structures to prevent the release of asbestos fibers from asbestos-containing materials (ACM). MassDEP's regulations require notification as well as specific removal, handling, and disposal requirements for all ACM. These work practices include removing ACM prior to demolition or renovation activities, wetting the ACM before it is removed to prevent the release of asbestos dust, fully containing the work area (e.g., with plastic sheeting) and drawing air out of the containment through an air filtration unit equipped with a HEPA filter capable of capturing asbestos fibers, sealing the wetted Asbestos-Containing Waste Material (ACWM) in leak-tight containers with asbestos labeling, and properly disposing of the waste in a landfill permitted to accept ACM or ACWM.

Common materials that may contain asbestos include thermal insulation on boilers, ducts and pipes; vinyl floor tiles; ceiling tiles; various mastics (i.e. glues); and asbestos cement products, including asbestos cement pipes. Some of these materials are "friable" material that, when dry, can be crumbled, shattered, pulverized or reduced to powder by hand pressure (e.g., thermal system insulation) and some are "non-friable" material, that when dry, cannot be crumbled, shattered, pulverized or reduced to powder by hand pressure (e.g., vinyl floor tiles and asbestos cement pipes that are in good condition and have not deteriorated). MassDEP regulates non-friable ACM because, if these materials have deteriorated, are significantly damaged, and/or are mishandled, asbestos fibers may be released to the ambient air.

Asbestos cement pipes often are found in underground utility conduits and municipal water, sewer and drainage systems. Asbestos cement pipes buried below ground are considered non-friable if they are in good condition. It should be noted that active asbestos cement pipe that is exposed and is not intended to be replaced or removed and is not disturbed by repair or replacement activities may remain in place and be backfilled.

II. Purpose

This guidance document explains how to safely remove, repair and dispose of asbestos cement pipes that exist in underground operating system networks owned by public and private utilities (e.g. water, sewer, electricity and gas). Its main purpose is to prevent the release of asbestos fibers into ambient air and to protect public health, safety, and the environment while removing, repairing and disposing of asbestos cement pipes. This guidance has been developed in recognition of the unique aspects of projects involving repair and replacement of underground asbestos-cement pipe that make certain specific requirements of 310 CMR 7.15 infeasible and/or impractical: emergency repairs need to be facilitated to protect public health and safety and to allow trenches to be closed as quickly as possible, it is usually infeasible to have an asbestos inspector prepare a

complete written survey report before starting to repair or replace asbestos-cement pipe or pipe segments (particularly for emergency repairs), and some standard asbestos work practices (e.g., full containment and air cleaning) cannot be practically implemented in trenches. In order to qualify for the Conditional Enforcement Discretion that is described in Section III below, the Owner and Operator (including contractors) must follow all the provisions of this document.

This guidance document summarizes the requirements of the MassDEP Asbestos Regulation (310 CMR 7.15) that apply to removal, repair, replacement or other work on underground asbestos cement pipe or suspected asbestos cement pipe material, and also provides guidance on how MassDEP intends to exercise enforcement discretion where the specific asbestos abatement activities described herein are implemented.

This document does not constitute “final agency action,” and is not “regulation” as that term is used in M.G.L. c.30A. It may not be relied upon to create rights, duties, obligations or defenses, implied or otherwise, enforceable by any party in any administrative proceeding with the Commonwealth. In addition, this guidance does not exempt anyone from complying with any other applicable local, state or federal law, including but not limited to: the United States Environmental Protection Agency (EPA) Asbestos National Emission Standards for Hazardous Air Pollutants (Asbestos NESHAP) regulation at 40 CFR part 61; the applicable United States Occupational Safety & Health Act (OSHA) standards at 29 CFR 1910 & 1926; and the Massachusetts Department of Labor Standards (DLS) regulation at 453 CMR 6.00.

III. Conditional Enforcement Discretion

A person who conducts the removal and associated abatement of asbestos cement pipe in accordance with the provisions of this guidance would not be subject to enforcement by MassDEP for violation of the following requirements of 310 CMR 7.15:

- The use of a DLS-certified asbestos inspector to prepare a written survey report that documents the types, amounts, condition and location of all ACM present in a utility conduit that will be subject to demolition or removal of cement pipe as required by 310 CMR 7.15(4);
- Establishment of full containment in accordance with “Work Area Preparation Requirements” 310 CMR 7.15 (7)(c);
- Implementation of air cleaning in accordance with “Work Area Ventilation System” requirements 310 CMR 7.15 (7)(e); and
- The use of a DLS-certified asbestos project monitor to perform a post-abatement visual inspection in accordance with 310 CMR 7.15(8).

IV. Guidance Provisions

a. Pre-Demolition/Renovation Survey

MassDEP's asbestos regulation establishes that owners and operators (including contractors) are responsible for determining whether cement pipe in a particular utility conduit that will be subject to demolition or renovation contains asbestos. The federal NESHAP regulation requires owners and operators to conduct a "thorough inspection" to determine the location of asbestos containing materials before starting demolition or renovation.¹

If owners and operators follow this guidance, it will not be necessary to have a DLS-certified asbestos inspector prepare a written survey report for underground asbestos-cement pipe projects as required by 310 CMR 7.15(4). However, owners and operators (including utilities conducting pipe repair or replacement), must conduct a "thorough inspection" to determine the location of any asbestos-containing pipe, insulation or other materials. Owners and operators of underground cement pipes may satisfy this requirement with:

- As-built plans or other documents identifying the content of particular cement pipes or pipe segments and any other material in the conduit that may be affected by a removal or repair project, provided that the documentation has been updated to reflect any repairs or alterations; or
- Other measures that demonstrate that a "thorough inspection" has been completed to identify asbestos cement pipe that will be affected by a removal or repair project. These measures can include visual identification through field observations of the pipe to be worked on (e.g., the manufacturer's brand-label markings indicating transite material or the source of the pipe); or sampling and analysis of cement pipe material at a laboratory certified by DLS.

Note: For projects that rely on a visual identification in the field, a "qualified" person must be present to observe the pipe when it is exposed and document in writing what features were used to identify the type of pipe to be removed/repaired/replaced. If relying on someone other than a DLS-certified asbestos inspector, a person is deemed "qualified" by having completed a DLS-approved training course specific to asbestos cement pipe worker safety (e.g., the "8 hour OSHA Class II Asbestos Training: Asbestos Cement Pipe (ACP) Worker Safety" course developed jointly by the Massachusetts Water Works Association (MWWA) and the Utility Contractors of New England

¹ The EPA Asbestos NESHAP regulation requires that the owner or operator shall, "...prior to the commencement of the demolition or renovation, thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos..." 40 CFR part 61.145(a)

(UCANE), or another course similar in length and content that has been reviewed and approved in writing by DLS).

In addition, the owner or operator may presume that a pipe or pipe segment contains asbestos and manage any repairs or removals in accordance with this guidance and the other applicable requirements of 310 CMR 7.15.

The owner/operator of the utility system at which the asbestos cement pipe was removed, repaired or replaced must keep documentation of the pre-demolition/renovation survey, signed and dated by the person who conducted the inspection, for a minimum of two (2) years in the project file. The documentation must indicate what information was relied upon to determine whether the pipe contained asbestos. (See Attachment A for a Pre-Demolition/Renovation Survey Documentation template.)

b. Notification

A notification must be submitted to MassDEP for each asbestos-cement pipe project on an Asbestos Notification Form ANF-001/BWP AQ-04 in accordance with 310 CMR 7.15(6). The notification must be submitted at least ten (10) working days before starting asbestos cement pipe removal. The ANF-001/BWP AQ-04 and answers to frequently asked questions about filing notifications are available on MassDEP's web site at:

<http://www.mass.gov/eea/agencies/massdep/service/approvals/bwp-aq-04-anf-001.html> . The easiest way to file an asbestos notification is to file it online via MassDEP's online filing system, eDEP: <https://edep.dep.mass.gov/>.

The ten-working day waiting period can be waived by obtaining an emergency waiver of this waiting period from MassDEP. Emergency waivers allow work to be performed right away. These waivers, which can be obtained by calling the MassDEP Regional Office that covers the town in which the work will be conducted, must be approved by MassDEP before the work starts. The MassDEP staff person who approves an emergency waiver will provide a project-specific waiver number that must be noted on the notification form. (See response to question number 27 in the "Frequently Asked Questions" section of this guidance document for appropriate MassDEP regional telephone numbers).

A notification fee, currently \$100.00, is required when filing an ANF-001/BWP AQ-04. However, asbestos abatements at property owned by cities, towns, counties, districts of the Commonwealth, municipal housing authorities, federally recognized Indian tribe housing authorities, state agencies, the Massachusetts Bay Transportation Authority, and owners of owner-occupied residential properties with four or fewer units are exempt from this fee.

Owners and operators who are planning to remove or repair several pipe segments over a specific period of time may apply to MassDEP for approval of a “blanket notification”, which would cover the entire project for a time period not to exceed one (1) year. While individual ANF-001/BW AQ-04 forms would still need to be submitted for each segment of the work, the blanket approval would eliminate the ten working day advance notification requirement for the individual filings. Information regarding asbestos blanket notifications may be found under the heading “BWP AQ 05 - Application for Asbestos Blanket - Form and Guidance” at the following link:

<http://www.mass.gov/eea/agencies/massdep/service/approvals/bwp-aq-05.html>.

An application fee of \$200 is required for each application for a blanket notification approval.

c. Licensing and Training

DLS’s regulation (453 CMR 6.00) establishes requirements for the use of contractors and other asbestos specialists who are licensed or certified by that Department. Please call DLS for all licensing and training questions. Contact information can be found in the response to Question 28 in the attached Frequently Asked Questions.

In lieu of hiring a DLS-licensed asbestos contractor, an owner or operator conducting asbestos abatement activity on underground asbestos cement piping may hire contractors or other entities who have completed the “8 hour OSHA Class II Asbestos Training: Asbestos Cement Pipe (ACP) Worker Safety” course developed jointly by the MWWA and UCANE, or a course similar in length and content reviewed and approved in writing by DLS, provided that the owner, operator and contractor comply with the provisions and procedures described in this guidance document.

d. Handling Practices

When repairing, removing or replacing asbestos cement pipe, it is important to handle the pipe in a manner that will minimize the risk of making it friable or releasing asbestos dust into the environment. Start by exposing the asbestos cement pipe with minimal disturbance. Excavate no closer than 6 inches of the pipe. Carefully uncover the remainder of the soil surrounding the pipe by hand or with a shovel. An assessment should then be made to determine if the pipe is damaged, cracked or broken.

i. Not Damaged Asbestos Cement Pipe (intact and not deteriorated):

1. Place 6 mil (0.006 inch) thick polyethylene (“poly”) sheeting under the asbestos cement pipe to prevent soil contamination.
2. Adequately wet the asbestos cement pipe with amended water using surfactant or liquid soap before and during removal to avoid creating airborne dust.

3. Separate the asbestos cement pipe at the nearest coupling (bell or compression fitting).
 4. Slide the pipe apart at the joints (no saw cutting) or use other methods that do not cause the pipe to break, become friable or otherwise create the potential to release asbestos fibers.
 5. Wrap the wet asbestos cement pipe in two layers of 6 mil polyethylene sheeting, seal with duct tape and label in accordance with all applicable regulatory requirements. This can be done in the trench or adjacent to the trench.
 6. If the trench is filled with water, the placement of polyethylene sheeting is not required.
 7. Refer to Section “IV.e.” of this guidance document for packaging, labeling, disposal, and record retention requirements.
- ii. Damaged Asbestos Cement Pipe (deteriorated or not intact) or when cutting or mechanical breakage (e.g., with saws, snap or blade cutting, and/or tapping) is necessary:
1. Place 6 mil (0.006 inch) thick polyethylene (“poly”) sheeting under the asbestos cement pipe to prevent soil contamination.
 2. Adequately wet asbestos cement pipe with amended water where cutting or breaking will occur.
 3. Saw cutting of asbestos cement pipe shall only be conducted with a HEPA-shrouded vacuum attachment or wet cutting equipment, unless it is conducted within a small enclosure that isolates the area in which the saw cutting is being conducted to prevent the release of asbestos fibers to ambient air, .
 4. Wrap wet asbestos cement pipe in two layers of 6 mil polyethylene sheeting, seal with duct tape and label. This can be done either in the trench or adjacent to the trench.
 5. Manage wrapped asbestos cement pipe, polyethylene sheeting and any other material contaminated with visible asbestos debris as ACWM in accordance with 310 CMR 7.15 and 310 CMR 19.061.
 6. Refer to Section “IV.e.” of this guidance document for packaging, labeling, disposal, and record retention requirements.

e. Packaging, Labeling, Disposal and Record Retention

All ACWM must be packaged, labeled, transported, stored and disposed of in accordance with requirements specified at 310 CMR 7.15(15): Asbestos-containing Waste Material Packaging Requirements, 310 CMR 7.15(16): Asbestos-containing Waste Material Transport Requirements, 310 CMR 7.15(17): Asbestos-containing Waste Material Storage and Disposal Requirements, 310 CMR 7.15(18): Waste Shipment Records and Reports, and 310 CMR 19.061: Special Waste, including but not limited to the following:

- i. Place properly wrapped and labeled ACWM pipe as well as all other containerized ACWM and debris in a roll-off container(s), or covered

trucks, trailers or vans that are lined with 2 layers of 6 mil polyethylene sheeting.

1. The container shall be an enclosed and sealed leak-tight container having proper labels and U.S. Department of Transportation placards as required.
 2. If open-top roll-off containers are used, they must be properly sealed, labeled and secured inside a locked fenced area when they are not being loaded to prevent access by unauthorized personnel, and covered to prevent water accumulation.
- ii. Package, transport and dispose of ACWM in accordance with local, state, and federal regulations.
 - iii. Complete waste shipment records must be retained for 2 years by the owner/operator of the facility that generated the ACWM.
 - iv. Dispose of ACWM at a landfill permitted to accept ACWM.

Please note: “Bulk Loading”² of ACWM is not permitted without written approval from MassDEP - via approval of a Non-Traditional Asbestos Abatement Work Practice Application. (See BWP AQ-36 “Application for Non-Traditional Asbestos Abatement Work Practice Approval”

<http://www.mass.gov/eea/agencies/massdep/service/approvals/bwp-aq-36.html> for information about how to apply for this permit.) Loading operations involving waste generated from asbestos cement pipe removal that is handled, packaged, labeled, containerized and stored/disposed of in accordance with Sections IV.d. and IV.e. of this guidance are not considered bulk loading and do not require a Non-Traditional Asbestos Abatement Work Practice Approval.

f. Visual Inspection Requirement

310 CMR 7.15(8) requires that, upon the conclusion of each asbestos abatement activity, the owner/operator shall ensure that a visual inspection is performed by a DLS-certified asbestos project monitor. The DLS-certified asbestos project monitor must inspect all surfaces within the work area for visible debris and if any is found, the contractor must re-clean the work areas until there is no visible debris.

When asbestos cement pipe removal is performed using the methods specified in this guidance document, the final visual inspection may be performed by a person who is “qualified” to perform this inspection by having completed a DLS-approved training course specific to asbestos cement pipe worker safety (e.g., the “8 hour OSHA Class II Asbestos Training: Asbestos Cement Pipe (ACP) Worker Safety” course), or another course similar in length and content

² “Bulk Loading” means the placement of unconfined ACWM in a vehicle or container, such as a roll-off, dumpster or truck *in lieu* of packaging the ACMW in individual leak tight containers.[310 CMR 7.15(1) Definitions

that has been reviewed and approved in writing by DLS), in lieu of an asbestos project monitor, provided that the following conditions have been met:

- i. The qualified person is physically present to conduct the final visual inspection of the work area prior to backfilling the trench;
- ii. The qualified person documents in writing that there was no visible debris remaining in the excavation trench, in soil excavated from the trench, in the surrounding area adjacent to the trench after the removal of the asbestos cement pipe, and on any tools used during the removal/repair/replacement activities; and
- iii. All ACWM has been removed for proper storage/disposal; and
- iv. The qualified person signs and dates the documentation of the final inspection as evidence that the inspection was performed and that the condition of no remaining visible debris was met.

The owner/operator of the utility system at which the asbestos cement pipe was repaired, removed or replaced must keep the documentation of the post-abatement visual inspection, signed and dated by the person who conducted the inspection, for a minimum of two (2) years in the project file. (See Attachment B for an example of a Post-Abatement Visual Inspection template.)

Frequently Asked Questions About Asbestos Cement Pipe Removal

1. What is Asbestos? Is it hazardous to your health?

Asbestos is a naturally occurring fibrous mineral consisting of any one of a number of silicates. Asbestos has been and is still used in a variety of products because of its physical properties, which make it resistant to heat, fire, and many caustic chemicals. Asbestos has been used extensively as fireproofing, an insulating agent, and for decorative purposes, among many other uses.

The physical properties that give asbestos its resistance to heat and decay are linked with several adverse human effects. Asbestos tends to break into a dust of microscopic fibers. Because of their size and shape, these tiny fibers can remain suspended in the air for long periods of time and can easily penetrate bodily tissue when inhaled or ingested. Because of their durability, these fibers can remain in the body for many years.

Asbestos is known to cause asbestosis and various forms of cancer. **Asbestosis** is a chronic disease of the lungs that makes breathing progressively more difficult, and can lead to death. Cancer can result from breathing asbestos fibers and **lung cancer** is the most frequent. **Mesothelioma**, an incurable cancer of the chest and abdominal membranes, almost never occurs without exposure to asbestos. Asbestos-related diseases have a long latency period and may not show up until 10 to 40 years after exposure. Each exposure increases the likelihood of developing an asbestos-related disease.

2. How do I know whether cement pipes contain asbestos?

Cement pipes used for public drinking water, waste water, roof drains or underground conduits may contain asbestos and should be handled in accordance with MassDEP's asbestos regulation (310 CMR 7.15) and this guidance document unless the owner's documentation or testing has shown that they do not contain asbestos or a DLS-certified asbestos inspector has determined that they do not contain asbestos. It is the obligation of anyone removing or repairing materials that contain asbestos to handle them in accordance with applicable laws and regulations. Ignorance or avoidance of this responsibility does not remove this obligation.

Up-to-date as-built plans that accurately identify the material that pipes or pipe segments are made of can be relied on to satisfy this requirement. Another acceptable method for determining whether a pipe or pipe segment contains asbestos is through visual identification in the field at the time of excavation, when the pipe material is readily identifiable by observing the manufacturer's brand-label (e.g. Johns-Manville Transite) or other markings on the pipe (e.g., indicating its source). This

identification must be done by a person who is “qualified” to perform this visual identification is present to observe the pipe when it is exposed and documents in writing what features were used to identify the type of pipe to be removed/repaired. In lieu of a DLS-certified asbestos inspector, a person is deemed “qualified” to conduct a visual inspection to identify the presence of asbestos containing cement pipe by having completed a DLS-approved training course specific to asbestos cement pipe worker safety (e.g. the “8 hour OSHA Class II Asbestos Training: Asbestos Cement Pipe (ACP) Worker Safety” course) or another course similar in length and content that has been reviewed and approved in writing by DLS). If up-to-date as-built plans are not available and a definitive visual identification cannot be made, the owner/operator can either presume the cement pipe contains asbestos and handle it in accordance with this guidance, or have it sampled and analyzed by a DLS certified laboratory.

Material that contains 1% or more asbestos as determined by a laboratory using EPA-approved analytical methods is regulated by MassDEP as an ACM. You can hire an asbestos consultant or laboratory to collect a sample and have it analyzed. You also may collect the sample yourself and bring it to a certified laboratory for analysis. (Note that you may need to take several samples over the length of the pipe to ensure that you obtain representative samples and did not only test a repaired section that has been replaced with a newer, non-asbestos material.) Before collecting samples, consult with the laboratory on how to safely collect the sample and how large the sample needs to be. DLS licenses and certifies asbestos testing laboratories and other types of asbestos professionals. Visit DLS’s website at <http://www.mass.gov/lwd/labor-standards/asbestos-program/license-lists/> or call DLS at 617-626-6960 for a list of certified asbestos laboratories.

3. Does MassDEP have to be notified prior to beginning an asbestos cement pipe removal or repair project?

Yes, the owner/operator of a facility containing asbestos cement pipes must notify MassDEP ten working days before removing or repairing asbestos cement pipes. Notification is required no matter who is doing the removal/repair or how much asbestos cement pipe is being removed or repaired. Please note that notification is required for repairs of asbestos cement pipe using tools that are considered “non-destructive” or “fail-safe” such as metal compression patches, wet tapping, etc. (See response to Question number 4 below for how to satisfy the notification requirement in the case of an emergency situation.)

4. We have an emergency and the pipe(s) need to be repaired immediately. Can we make the necessary repairs prior to submitting notification to MassDEP?

Yes, if MassDEP grants you an “emergency waiver.” Work can be performed right away by calling the appropriate regional MassDEP office and obtaining an emergency waiver of the ten (10) working day waiting period (see response to

question number 27 for the telephone numbers for the asbestos program in each MassDEP regional office).

If the emergency occurs after business hours or on a weekend, leave a detailed message including your contact information on voice mail for the MassDEP asbestos inspector's voice mail and proceed with the repairs as detailed in this document. You should then follow up with MassDEP on the following business day. You will still be required to submit an asbestos notification form ANF-001/BWP AQ-04 within 24 hours of the removal.

In addition, you can conduct the work without the required ten working day notification period if you have a MassDEP approved asbestos blanket notification. Information regarding asbestos blanket notifications may be found under the heading "BWP AQ 05 - Application for Asbestos Blanket - Form and Guidance" at the following link: <http://www.mass.gov/eea/agencies/massdep/service/approvals/bwp-aq-05.html>.

5. Is there a notification form I should use?

Notification for asbestos cement pipe removal must be made by completing and submitting to MassDEP the MassDEP-approved Asbestos Notification Form ANF-001 (also known as BWP AQ-04). The Asbestos Notification Form is available on MassDEP's web site at <http://www.mass.gov/eea/agencies/massdep/service/approvals/bwp-aq-04-anf-001.html>. The easiest way to file an asbestos notification is to file it online via MassDEP's website. See question number 10 below.

6. When must the notification be submitted?

The regulations require that the notification must be submitted at least ten working days in advance of the start of the asbestos cement pipe removal project. "Working days" do not include Saturdays, Sundays, or any day that MassDEP offices are closed for business, such as legal holidays.

7. When does the ten working day waiting period begin and end?

If you file electronically through eDEP, your 10 working day waiting period will start when you submit your form, and you will receive an automatic notification that the submittal was received.

If you file a paper notification form, your 10 working day waiting period starts on the day on which the submittal was postmarked or the day on which it was hand-delivered to MassDEP (by you or by a delivery service).

Please note that you must start work on the “start date” and end on the “end date” you indicate on the ANF-001. If you change the start date, you must revise your notification prior to the original start date indicated and allow for a full ten-day waiting period prior to the revised start date. If you need to start work sooner than ten days before the revised start date, call the MassDEP regional office to request an emergency waiver of the ten-day waiting period. (See MassDEP contact information found at FAQ no. 27.) If you start and end work on the dates indicated in the original notification, but work intermittently within that period, that does not require a revision - simply notify the MassDEP regional office which days will not be performing work.

8. Will I be notified when I can begin the work?

No. Unless MassDEP contacts you with a statement of deficiencies about your notification, you can begin work on the "project start date" you specified on the Asbestos Notification Form ANF-001. When completing the ANF-001, be sure that the "project start date" falls after the 10 working day waiting period.

MassDEP recommends that you keep a copy of the completed ANF-001 that you file online or, if you file a paper copy, a copy that shows the number on the notification decal sticker you attached to the notification form prior to submitting the form to MassDEP.

9. Is a fee required for filing an asbestos notification?

The notification fee required by MassDEP regulations (310 CMR 4.00: Timely Action Schedule and Fee Provisions) for asbestos removal is \$100 per notification. A notification revision requires re-filing the notification and payment of a \$35 fee.

Please note: owners of owner-occupied residential properties with four or fewer units, cities, towns, counties, districts of the Commonwealth, municipal housing authorities, federally recognized Indian tribe housing authorities, state agencies and the MBTA are not subject to the asbestos notification fee. However, state agencies are subject to fees greater than \$100 (e.g., the \$200 Blanket Notification Approval application fee).

10. How do I submit the ANF-001 to the MassDEP?

There are two ways to submit an Asbestos Notification Form ANF-001:

Electronic Filing: File the ANF-001 online via MassDEP’s website. If you have not already done so, register online with eDEP Online Filing: <http://www.mass.gov/dep/service/compliance>. Select “New User” and complete the required steps. It should take no more than five minutes to complete the registration process, and you can begin online filing of your notifications right away. Filing through eDEP will ensure that your submitted form is complete, and you will receive an automatic message indicating that your notification has been accepted.

May 22, 2015 Update

Paper Filing: When the ANF-001 is completely filled out, and the appropriate decal is affixed to the form (see below), use regular, certified or U.S. Postal Service Express mail, or a private mail or overnight service, to send the form to:

MassDEP
P.O. Box 4062
Boston, MA 02211

Forms are picked up from this P.O. Box every working day.

Please note: If you file a paper form, please be aware that MassDEP will return it if it is found to be incomplete, and your notification will not be valid until a completed form is re-submitted.

When filing online via eDEP, you will pay the fee online using a credit card. Notifications for jobs by an entity that is exempt from the fee may also be filed online.

Paper filers can pay the fee in two ways: 1) by purchasing a notification fee decal from MassDEP and affixing the decal to the Asbestos Notification Form ANF-001 before submitting it, or 2) by sending a check with their notification form to the P.O. Box above.

For paper notifications that are exempt from the fee, an EXEMPT decal must be obtained from MassDEP and affixed to the notification form, or you must ensure that Question 3 in Section A asking if the project is fee-exempt is answered as "Yes."

Fee decals may only be purchased in person at the reception area on the second floor of MassDEP's office at One Winter Street, Boston. For fee-exempt asbestos abatement jobs, EXEMPT notification decals may be picked up (free of charge) at the reception area of MassDEP's office at One Winter Street, Boston or at any MassDEP regional office. (Note: the "Regional Office Lookup by City/Town" tool can be accessed at the following URL:
<http://www.mass.gov/eea/agencies/massdep/about/contacts/>).

For decals requiring a payment, payment must be in the form of a check or money order made payable to "Commonwealth of Massachusetts." Cash and credit cards cannot be accepted.

Each notification decal contains a unique number that indicates that the fee has been paid.

11. Do I need to notify other government agencies in addition to the MassDEP?

You may be required to notify the local Building Department, Fire Department, or Board of Health in the city or town where the asbestos is being removed. Always contact local officials to ask what notification or permits are required. Submittal of a complete ANF-001 to MassDEP satisfies **state** (both MassDEP and MA DLS) and **federal** notification requirements (e.g., EPA Asbestos NESHAP) for projects that will remove or disturb asbestos-containing material.

12. Do I need to hire an asbestos contractor to repair and/or remove asbestos cement pipe?

DLS's regulation (453 CMR 6.00) establishes requirements for the use of contractors and other asbestos specialists who are licensed or certified by DLS. Please call DLS for all licensing and training questions. Contact information can be found in the response to Question 28 in the attached Frequently Asked Questions.

In lieu of hiring a DLS-licensed asbestos contractor, an owner or operator conducting asbestos abatement activity on underground asbestos cement piping may hire Contractors or other entities who have completed the "8 hour OSHA Class II Asbestos Training: Asbestos Cement Pipe (ACP) Worker Safety" course or a course similar in length and content reviewed and approved in writing by DLS, provided that the owner, operator and contractor comply with the provisions and procedures that are described in this guidance document.

13. Can I crush the asbestos cement pipe in the trench and place new pipe over it?

No, crushing an asbestos cement pipe and leaving it in the trench is prohibited under 310 CMR 7.15. Further, the EPA has determined that backfilling and burial of the crushed asbestos cement pipe would cause these locations to be considered active disposal sites and therefore subject to the "Standard for Active Waste Disposal Sites" (40 CFR 61.154).

14. Can I "ream" or "pipe burst" new water supply pipe through existing asbestos cement pipe?

No, this is not allowed because reaming or pipe bursting through an existing asbestos cement pipe would cause the existing asbestos cement pipe to become crushed and "friable" (see response to question number 13 above).

15. What if the trench is filled with water which prevents the placement of polyethylene sheeting below the asbestos cement pipe (as required in Section IV.d. – Handling Practices)?

If the trench is filled with water, the placement of polyethylene sheeting is not required, as stated in Section IV.d – Handling Practices. However, any visible debris must be managed in accordance with the requirements of Section IV.e. – Packaging, Labeling, Disposal and Record Retention and IV.f. – Visual Inspection Requirement.

16. What should I do with the water in the trench?

For work on the intact asbestos cement pipe(s), first try to pump the water out to a storm drain prior to any work. If there is substantial damage to the asbestos cement pipe and there are numerous pieces immersed in standing water, then the contaminated water should be pumped out and filtered through a 5 micron filter before the water is discharged.

17. Am I required to remove asbestos cement pipe that will not be disturbed by repair or replacement activities?

MassDEP only requires the removal of asbestos cement pipe that is exposed and will be disturbed during repair or replacement activities.

When a section of asbestos cement pipe is being repaired or replaced, the remaining portions of that pipeline are not required to be removed, provided that they are not exposed by excavation activity.

Additionally, if a section of asbestos cement pipe that is being actively used (e.g., a utility conduit) is exposed by excavation but will not be impacted by the repair or replacement work, it may be left in place and backfilled.

18. Where can I obtain the packaging and labeling materials?

The MassDEP-required asbestos warning labels and asbestos waste bags may be obtained from industrial supply houses, insulation supply houses, or may be purchased directly from licensed asbestos contractors. Polyethylene sheeting and duct tape are widely available from hardware, home supply and other stores.

19. Can I store waste asbestos cement pipe?

Asbestos cement pipe waste material that has been properly wetted, sealed and labeled can be temporarily stored for up to thirty (30) days at a secured location on property owned or controlled by the owner or operator of the utility system or at the place of business of the company/contractor removing asbestos-cement pipe from its site of origin. The storage location must be secured (e.g., storage in a locked fenced-

in area) and maintained in accordance with all federal, state and local requirements. Contact local officials to determine if temporary storage of asbestos cement pipes is allowed in your municipality.

20. Can I store unused “virgin” asbestos cement pipe?

Unused (i.e. “virgin”) asbestos cement pipe that is still suitable for use is not considered an ACWM, and is therefore not subject to the ACWM storage limitations. Measures should be taken to ensure that stored virgin asbestos cement pipe does not become deteriorated by constant exposure to the elements. If virgin asbestos cement pipe deteriorates so that it is no longer suitable for use, then it would be considered ACWM and subject to all the applicable packaging, labeling, storage and disposal requirements at 310 CMR 7.15(15) – (18).

21. Can I dispose of the asbestos cement pipes with my other solid waste?

No. The asbestos cement pipes must be managed as a “Special Waste” (requiring proper packaging, labeling, and disposal) and in Massachusetts may only be disposed of at a facility that is permitted to accept ACWM under 310 CMR 19.061 (“Special Waste” regulation).

22. How can I find a place to dispose of the asbestos cement pipes?

The best option is to hire a waste hauler or asbestos contractor to transport the asbestos cement pipes to a disposal facility. Many waste haulers and asbestos contractors are familiar with various disposal facilities and frequently transport wastes to facilities permitted to accept ACWM.

You also can contact a landfill directly and arrange to transport the waste to the landfill yourself. ACWM can only be disposed at a solid waste landfill permitted to accept “Special Waste”, which in Massachusetts must be operated in accordance with regulatory requirements specified at 310 CMR 19.061, or in another state, in accordance with the relevant “Special Waste” permit requirements. You should contact the facility in advance of transporting ACWM for disposal.

ACWM may not be sent to an incinerator or to a construction and demolition (C&D) debris processing facility in Massachusetts. Likewise, no Massachusetts transfer stations are permitted to accept ACWM.

23. How do I find an asbestos waste hauler?

Asbestos waste haulers may be located by using any available internet search engine or by looking this topic up in the Yellow Pages. Try entering/looking under topics such as "rubbish," “waste” or "asbestos." Any firm hauling ACWM must be

registered with the Federal Highway Administration's Motor Carrier Division. Call the nearest regional MassDEP office for additional help.

24. Can I transport the waste asbestos cement pipes myself?

Waste asbestos cement pipe that has been packaged and labeled in accordance with Section IV.e. – Packaging, Labeling, Disposal and Record Retention, may be transported in a covered truck, trailer or van to a secured, temporary storage location at property owned or controlled by the pipe owner or operator or at the place of business of the company/contractor that removed the asbestos-cement pipe from the excavation, as outlined in question 19. If a van is used, the waste asbestos cement pipe should be transported in a compartment separate from the driver or passenger seats. A pickup truck bed should be covered with an impermeable tarpaulin cover and secured so that it does not allow the accumulation of rain water. The waste containers should not be loaded above the side rails in any truck or trailer.

25. Is there any paperwork required for transporting the waste asbestos cement pipes?

Yes. 310 CMR 7.15(18): Waste Shipment Records and Reports requires that an asbestos Waste Shipment Record (WSR) document each shipment of ACWM. Waste hauling companies and/or asbestos removal companies can supply WSR forms. (A template for the WSR form is available on the MassDEP website at: <http://www.mass.gov/eea/agencies/massdep/air/programs/asbestos.html>) The WSR must be signed by each company or person involved with removal, transportation and disposal of the ACWM, including the facility owner or “generator” of the asbestos. The asbestos removal contractor may sign on behalf of the owner.

Pursuant to 310 CMR 7.15(18), if a completed copy of the WSR, signed by the disposal facility to acknowledge receipt of the waste shipment, is not received back by the generator within 35 days of the initial shipment, the generator must contact the transporter or disposal facility to determine the status of the waste shipment. This section of the regulation also requires a generator to notify the MassDEP regional office in writing if the generator does not receive a signed copy of the WSR from the disposal facility within 45 days of the date of shipment. The generator, the transporter, and the disposal facility must each retain a copy of the WSR signed by all the parties for at least two years. You do not need to send a completed copy of the WSR to any regulatory agency, but MassDEP may request a copy of the WSR from any of the parties in the event of an inspection.

Additionally, transportation of asbestos (which is designated as a hazardous material for transportation) is regulated by the U.S. Department of Transportation (US DOT), which has established requirements for shipping documents, packaging, labeling, and vehicle placarding (49 CFR 173.1090): asbestos must be loaded, handled and unloaded in a manner that will minimize occupational exposure to airborne asbestos fibers released during transit. US DOT also requires that transporters carry

identification papers for all quantities of asbestos greater than 1 pound. The Massachusetts state police enforce this requirement.

26. Does MassDEP have a document containing general information about asbestos?

Yes. The “Asbestos Information and Resource Guide” is available on MassDEP’s website at <http://www.mass.gov/eea/agencies/massdep/air/programs/asbestos.html> under the heading “General Information.” The guide includes contact information for various government agencies responsible for asbestos, a list of regulations governing asbestos, and general information about asbestos and asbestos removal.

27. How do I contact MassDEP for more information?

For more information on asbestos or other environmental issues, please visit MassDEP’s website at www.mass.gov/dep/about/contacts.htm or contact the following MassDEP officials:

Boston:

For information about asbestos policy/regulation:

Mike Elliott – Asbestos Program Coordinator

Telephone: 617-292-5575 or e-mail: michael.elliott@state.ma.us

For information about filing asbestos notifications and fees:

Email baw.edep@state.ma.us or call the Asbestos Hotline at 617-292-5766.

Central Region

Gregg Levins

Telephone: 508-767-2768 or e-mail: gregory.levins@state.ma.us

Northeast Region

John Macauley

Telephone: 978-694-3262 or e-mail: john.macauley@state.ma.us

Southeast Region

Cynthia Baran

Telephone: 508-946-2887 or e-mail: cynthia.baran@state.ma.us

Emergency Waiver Hotline: 508-946-2882

Western Region

Marc Simpson

Telephone: 413-755-2115 or e-mail: marc.simpson@state.ma.us

May 22, 2015 Update

28. How do I contact Massachusetts DLS?

For more information on Massachusetts DLS asbestos training, certification and/or licensing requirements, please contact:

Massachusetts Department of Labor Standards/Asbestos Program

Charles Hurley Building

19 Staniford Street, 2nd Floor

Boston, MA 02114

Telephone: 617-626-6960 Fax: 617-626-6965 Web Site: www.mass.gov/dols

Template A: Pre-Demolition/Renovation Survey Documentation

1. Project Location:

(Street address, GPS coordinates or other location identification)

City/Town: _____, MA

2. Pre-Demolition/Renovation Survey

Survey Date: _____

MassDEP's asbestos regulation requires owners and operators (including contractors) to determine whether cement pipe in the utility conduit that will be disturbed contains asbestos. Please identify the information that was used to determine whether the pipe at this location contains asbestos by checking all applicable boxes:

☐ Accurate, up-to-date as-built plans or other utility network documents. Specify title and revision date of the as-built drawing or other documentation: _____

☐ Visual identification/ field observations of exposed pipe. Specify manufacturer's brand-label marking (e.g. "Johns-Manville Transite") or other features used to identify composition/source of pipe: _____

☐ I was physically present at the location described above and personally observed the pipe or pipe segment when it was exposed and before it was removed, replaced and/or repaired.

☐ Presumed that pipe contained asbestos.

☐ Collected representative samples that were analyzed at a certified laboratory.

Identify Laboratory and DLS certification number: _____

Date samples were collected: _____ Date of lab report: _____

Result of the analysis (% asbestos): _____

Does the pipe (or pipe segment) that will be disturbed contain asbestos? ☐ Yes ☐ No

If "Yes", what is the MassDEP Asbestos Notification Number (ANF-001 Form)? _____

3. Qualifications. Please check the applicable box:

☐ I have successfully completed the "8 hour OSHA Class II Asbestos Training: Asbestos Cement Pipe (ACP) Worker Safety" course approved by the Massachusetts Department of Labor Standards (DLS), or a course similar in length and content reviewed and approved in writing by DLS; or

☐ I am a DLS-certified Asbestos Inspector.

Name (please print): _____

Title/Company: _____

Signature: _____ Date: _____

Template B: Post-Abatement Visual Inspection Documentation

1. Project Location/Identification:

(Street address, GPS coordinates or other location identification)

City/Town: _____ MA

MassDEP Asbestos Notification Number (ANF-001 Form): _____

2. Post-Abatement Visual Inspection

Date of Visual Inspection: _____

When any repair/removal of an asbestos cement pipe or pipe segment is complete, a visual inspection must be done before the trench is backfilled to confirm that ALL of the following conditions have been met. Please check each condition below to document that the visual inspection confirmed:

☐ No visible debris was present in trench.

☐ No visible debris was present outside of the trench (e.g. in excavated soils and the immediately surrounding area).

☐ No visible contamination was seen on tools.

☐ All Asbestos Containing Waste Material has been removed from the area for proper disposal.

☐ I was physically present at the location described above and personally conducted this inspection while the pipe or pipe segment was exposed and before the trench was backfilled.

3. **Qualifications.** Please check the applicable box:

☐ I have successfully completed the "8 hour OSHA Class II Asbestos Training: Asbestos Cement Pipe (ACP) Worker Safety" approved by the Massachusetts Department of Labor Standards (DLS), or a course similar in length and content reviewed and approved in writing by DLS; or

☐ I am a DLS-certified Asbestos Project Monitor.

Name (please print): _____

Signature: _____

Title/Company: _____

Date: _____

SECTION 31 00 00

EARTHWORK

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide excavating, filling, backfilling, stockpiling, bedding, compacting, grading, protection, installation, and removal of support of excavation and other Work necessary for the construction of pipelines, structures, pavements, earthen embankments and appurtenant Work in accordance with this Section, the Drawings and applicable reference standards listed in Division 01.

B. Related Sections

1. 31 41 00 Shoring and Bracing

1.02 PRICE AND PAYMENT PROCEDURES

- ###### **A. Measurement and payment requirements: per Division 01 General Requirements.**

1.03 References

A. Reference Standards

1. ASTM C117: Standard Test Method for Materials Finer than 75- Micrometers (No. 200) Sieve in Mineral Aggregates by Washing
2. ASTM C136: Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
3. ASTM D1556: Density and Unit Weight of Soil in Place by the Sand-Cone Method
4. ASTM D1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
5. ASTM D6938: Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.04 ADMINISTRATIVE REQUIREMENTS

- ###### **A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.**

1.05 SUBMITTALS

- ###### **A. Submit in accordance with Division 01 General Requirements.**
- ###### **B. Product Data.**

C. Sample Test Reports and Evaluations:

1. Materials gradations
2. Backfill moisture-density relationships
3. Field compaction testing

D. Source and Field Quality Control Submittals.

E. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Waste Management and Disposal:

1. Legally dispose of excess or unsuitable material at no additional cost to OWNER.

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General

1. Suitable materials: As shown on the Drawings or as specified below.
2. Unsuitable materials: Material containing excessive clay, vegetation, organic matter, debris, pavement, stones or boulders over 6-inches in greatest dimension, wet or frozen material, and material, which in the opinion of the OWNER or ENGINEER, will not provide a suitable foundation or structural support for the pipe and is unsuitable for use in backfill.
3. On-Site Material: Any suitable material from on-site excavation. Supply additional material as required to completely backfill trenches. Unless specifically stated elsewhere, suitable material brought on Site for trench backfill shall not be considered for payment.
4. Material for embankments and general fills may contain pieces of excavated ledge having maximum dimension of 12-inches if approved by the ENGINEER.

5. OWNER reserves the right to inspect off Site sources of materials and order tests of these materials to verify compliance with these Specifications. The CONTRACTOR shall provide the location of off-site sources and access to off Site sources whenever requested by OWNER.

- B. Gravel Borrow (Trench Backfill): Consisting of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings, deleterious material and conforming to Division III, subsection M1.03.0, Type B of Massachusetts Department of Transportation (MassDOT) Standard Specifications for Highways and Bridges and Supplements. Gradation requirements shall be determined by AASHTO-T11 and T27. Sieve analysis by weight:

Sieve Size	Percent Passing by Weight
1/2 inch	50-85
#4	40-75
#50	8-28
#200	0-10

Type a: maximum stone size = 6-inches in largest dimension
Type b: maximum stone size = 3-inches in largest dimension

- C. Sand: 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. Sieve analysis by weight:

Sieve Size	Percent Passing by Weight
3/8-inch	100
#4	95-100
#16	45-80
#50	10-30
#100	2-10
#200	0-3

- D. Crushed Stone / Pipe Bedding: 3/4-inch sized crushed stone; durable, hard, clean angular rock fragments obtained by breaking and crushing rock material meeting the criteria of Division III, subsection M2.01.4 of the MassDOT Standard Specifications for Highways and Bridges and Supplements free of ice, snow, sand, silt, clay, loam, shale, or other deleterious matter; for bedding beneath pipe and structures, to 6-inches above the crown of the pipe. Where required by ENGINEER, sand shall be used in lieu of crushed stone for pipe bedding. Sieve analysis by weight:

Sieve Size	Percent Passing by Weight
1-inch	100
3/4-inch	90-100
1/2-inch	10-50
3/8-inch	0-20
#4	0-5

- E. Gravel Borrow (Roadway Subbase): Processed gravel for backfill per M1.03.1 of the MassDOT Standard Specifications and Supplements, consisting of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials. Coarse aggregate percentage of wear: not more than 50 by the Los Angeles Abrasion Test. Sieve analysis by weight:

Sieve Size	Percent Passing by Weight
3-inch	100
1 1/2-inch	70-100
3/4-inch	50-85
#4	30-60
#200	0-10

- F. Loam Borrow: Loam borrow shall be in accordance with MassDOT Standard Specifications for Highways and Bridges and Supplements and consist of fertile, friable, natural topsoil similar in nature to topsoil in Project location, without admixture of subsoil, refuse or other foreign materials and shall be obtained from a well-drained arable Site. The loam shall be a mixture of sand, silt, and clay particles. The mixture shall contain approximately equal portion of each material so as to exhibit sandy and clayey properties. The loam shall be reasonably free of stumps, roots, heavy or stiff clay, stones larger than 1-inch in diameter, lumps, coarse sand, noxious weeds, stick brush, trash, debris, or other objectionable materials. The loam shall be reasonably well draining, shall not contain toxic amounts of either acid or alkaline elements and shall contain not less than 4 percent nor more than 20 percent organic matter as determined by the loss on ignition of oven-dried samples. Test samples shall be oven-dried to a constant weight at a temperature of 230 degrees F (plus/minus 9 degrees F).
- G. Refill Material: Use crushed stone for refilling excavation below grade or rock excavation unless otherwise directed by the ENGINEER.
- H. Common Fill: Friable material and no objects greater than 6-inches in diameter, no more than 5 percent by weight finer than No. 200 sieve, and free from ice and snow, roots, sod, rubbish and other deleterious or organic matter. Excavated material from on-site sources which meet these Specifications may be used for Common Fill.
- I. Select Backfill: As specified for Common Fill with no stones larger than 3-inches in the largest dimension.
- J. Controlled Density Fill (CDF) (Flowable Fill): Excavatable and used to limit settlement, lateral movement, undermining, washout, and other hazards created by earthwork operation as shown on the Drawings and when excavating around structures, utilities, sidewalks, pavements, and other facilities. Batch CDF at concrete plant.
1. Portland Cement: AASHTO M85
 2. Fly Ash: AASHTO M295. Class F
 3. Sand: M4.02.02 of MassDOT Standard Specifications and Supplements.

4. Water: M4.02.04 of MassDOT Standard Specifications and Supplements.
5. Air Entraining Admixture: M4.02.05 of MassDOT Standard Specifications and Supplements.
6. Compressive Strength: 28 day = 30-80 psi, 90 day = 100 psi
7. Slump: 10 - 12 inches

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verification of Conditions

1. Before starting Work, check and verify governing dimensions and elevations. Survey condition of adjoining properties with ENGINEER. Take digital video recording of any prior settlement or cracking of structures, pavements, and other improvements. Prepare a list of such damages, verified by, and signed by CONTRACTOR, ENGINEER, and others conducting the investigation.
2. Coordinate survey. Establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

Locate datum level used to establish benchmark elevations sufficiently distant so as not to be affected by excavation operations.

3.02 FIELD QUALITY CONTROL

- #### **A. Provide in accordance with Division 01 General Requirements.**

3.03 EXCAVATION

- #### **A. Remove materials encountered to the limits shown on the Drawings, designated in the Specifications, or as required by the OWNER.**
1. Do not perform excavation below normal grade to remove and replace unsuitable materials until approved by the ENGINEER.
 2. Do not perform excavation of rock, boulder, or unsuitable materials until material to be excavated has been cross-sectioned and classified by ENGINEER.
- #### **B. Earth Excavation: Removal and disposal of pavements, curbing and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, and other materials encountered that are not classified as rock excavation or unauthorized excavation. Legally dispose of surplus materials resulting from excavation and not needed for use on the Project, as determined by the ENGINEER. Obtain necessary permits for legal disposal of surplus material.**

- C. Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 feet and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
1. In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other Work.
- D. Excavation in Asphalt Pavement Areas
1. Saw cut or mill to full depth through existing pavement prior to any excavation for pipe or structure placement. Minimize disturbance of remaining pavement. Cut and remove the minimum amount of pavement required to do the Work.
 2. Use shoring and bracing where sides of excavation will not stand without undermining pavement.
 3. Keep material and soil stockpiles a minimum 10-feet back from the edge of excavation, or in accordance with the approved support of excavation design, to avoid overloading of the sides of excavation and prevent slides or cave-ins.
 4. Remove and dispose of existing pavements in the course of the Work. Take care to avoid mixing existing pavement material with excavation material to be used for backfill.
- E. Excavation for Trenches
1. Excavate to widths shown on the Drawings.
 2. Produce an evenly graded flat trench bottom at the subgrade elevation required for installation of pipe and bedding material.
 3. Load excavated material directly into trucks unless otherwise permitted by the ENGINEER.
 4. Place backfill material directly into trench or excavation. Do not stockpile material to be used as backfill in traffic areas.
- F. Unauthorized Excavation: Removal of materials beyond indicated subgrade elevations or dimensions without specific direction of ENGINEER. Unauthorized excavation, as well as remedial Work directed by ENGINEER including refilling, is at no additional cost to OWNER.
1. Refilling Unauthorized Excavation
 - a. Trenches: Use 3/4-inch crushed stone and stabilization fabric as a separator material, if necessary, as directed by ENGINEER.
 - b. Elsewhere: Backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by ENGINEER.

G. Excavation to Remove and Dispose of Unsuitable Material: When excavation has reached required subgrade elevations, notify ENGINEER who will make an inspection of conditions. If unsuitable materials are encountered at required subgrade elevations, carry excavations deeper as directed by ENGINEER and replace excavated material with gravel or crushed stone.

H. Material Storage

1. Stockpile and maintain suitable surplus excavated materials for re-use as backfill anywhere within the Project limits as directed by the ENGINEER. Place, grade, and shape stockpiles for proper drainage. Cover stockpiles when unused to limit infiltration by precipitation.
2. Provide erosion controls around stockpile areas as required by the local Conservation Agent and/or the ENGINEER at no additional cost to OWNER.
3. Locate and retain soil materials at least 10-feet away from edge of excavations or as allowed approved support of excavation design.

I. Remove and Dispose of Unsuitable Material

1. Below normal grade: In accordance with Paragraph 3.02.D. above.
2. Above normal grade: Replace unsuitable material with suitable on-Site material. Use Select Backfill if additional material is required.

J. Earthen Embankment Fill

1. Strip all organic topsoil, trees, shrubs, roots of other vegetation from along the length and breadth of all areas which are to have fill material placed on top. Fill depressions left by grubbing and stripping with material of the same type and compacted to a density at least equal to that of the surrounding foundation material.
2. If independent inspection and testing agency and/or ENGINEER determines that unsuitable soil is present, continue excavation and replace with compacted fill material as directed.
3. Proof roll all subgrades as directed by the ENGINEER prior to placement of fill. Excavate soft areas and replace with appropriate compacted fill.
4. Do not place embankment over porous, wet, frozen, or spongy subgrade or previous embankment surfaces. In the event these conditions occur, excavate, and remove the unsuitable material prior to placing more fill.
5. Dewater to maintain groundwater levels a minimum of 1-foot below bottom of excavations and/or subgrades. Place all fill "in-the-dry".
6. Bench all existing slopes prior to placing horizontal fill layers on existing slopes of greater than 6H to 1V.
7. Place materials in continuous horizontal layers not exceeding 8-inch loose lift thickness.

8. Compact all soil materials to a minimum 95 percent of the maximum dry density as determined by ASTM Test D-1557, with a water content plus/minus 2 percent) of optimum moisture content. If wet fill cannot be adequately compacted, remove, and replace with drier fill.
 9. Dice, harrow, or otherwise dry any fill that is too wet for proper compaction to a proper moisture content for compaction to the required density.

Remove and replace fill material that cannot be dried within 48 hours of placement with drier fill.
 10. Uniformly water fill that is too dry for proper compaction with sufficient water to allow compaction to the required density.
 11. Compact to meet the above stated density criteria, but at minimum make four passes with an approved compactor. Make additional passes as necessary to achieve a degree of compaction of at least 95 percent.
 12. Compact impervious and semi pervious materials (more than 15 percent passing the #200 sieve) with a tamping (sheep-foot) roller or a rubber-tired roller. In the event that compaction results in a smooth surface on top of the lift, that surface is to be scarified before the placement of the next lift.
 13. Compact pervious materials (sands, gravels, and stone materials) by means of self-propelled vibratory rollers. In confined areas, use hand-guided equipment such as a large vibratory plate compactor. Do not exceed lift thickness of 6-inches.
 14. Remove and replace fill which becomes disturbed after compaction as a result of the CONTRACTOR's operations and re-compact to the specified degree of compaction at the CONTRACTOR's expense.
 15. Place and compact soil material on the embankment in a direction parallel to the top of the embankment.
- K. Controlled Density Fill (CDF) (Flowable Fill): CDF shall be used as backfill, where directed by OWNER, to prevent settlement, lateral movement, undermining, washout, and other hazards created by earthwork operation when excavating around structures, utilities, sidewalks, pavements, and other facilities. Following the installation of CDF, the trench shall be plated overnight and backfilled the following day.
- L. Riprap stone: Sound, durable rock that will not disintegrate due to exposure to water or weather, angular in shape (such as rough, unhewn quarry stone or fragments obtained by blasting, breaking, or crushing natural rock). Do not use rounded boulders or cobbles, or flat, platy stones, shale, or slate rock with its largest length dimension 3-times greater than its shortest dimension.
- M. Riprap gradation: Stone size shall correspond to inch dimension indicated on Drawings. D50 stone size represents 50 percent of stone passing D50 dimension sieve screen. D20 stone size, 20 percent passing: 1/2 D50 dimension. Maximum size limit, D100: twice the D50 stone size dimension.

N. Field Quality Control

1. Provide in accordance with Division 01 General Requirements.

3.04 COMPACTION

- A. Use methods which produce the required degree of compaction throughout the entire depth of material placed without damage to new or existing facilities and which are approved by the ENGINEER. Adjust moisture content of soil as required. Remove and replace material which is too wet to compact to required density. Compact each layer as Work progresses.

Compaction Method	Maximum Stone Size	Maximum Loose Lift Thickness		Minimum Number of Passes	
		Below Pavement	Less Critical Areas	Below Pavement	Less Critical Areas
Hand-operated vibratory plate or light roller in confined areas	4 inches	6 inches	8	4	4
Hand-operated vibratory drum rollers weighing at least 1,000 lbs. in confined areas	6 inches	10 inches	12 inches	4	4
Light vibratory drum roller min. weight at drum 5,000 lbs., min. dynapac force 10,000 lbs.	8 inches	6 inches	18 inches	4	4
Medium vibratory drum roller min. weight at drum 10,000 lbs., min. dynapac force 20,000 lbs.	8 inches	6 inches	24 inches	6	6

B. Degree of Compaction (minimum densities):

Fill and Backfill Location	Density
Under structure foundations	95% of max.
Under building slab	95% of max.
Top 2 feet under pavement	95% of max.
Below top 2 feet under pavement	92% of max.
Trenches through unpaved areas	90% of max.
Embankments	90% of max.
Pipe Bedding	92% of max.
Beside structure foundation walls, tank walls and retaining walls	90% of max.
Under pipes through structural fills	90% of max.
Maximum density	ASTM D1557, modified
Field density tests	ASTM D1556 (sand cone), ASTM D2167 (rubber balloon), or ASTM D2922 (nuclear methods)

Note: Fill that is too wet for proper compaction shall be disked, harrowed, or otherwise dried to proper moisture content for compaction to the required density. If the fill material cannot be dried within 48 hours of placement, remove, and replace with drier fill.

C. Field Quality Control

1. Provide in accordance with Division 01 General Requirements.
2. Testing
 - a. Determine actual in place densities using field tests as directed by the ENGINEER and in accordance with Division 01 General Requirements.
 - b. Perform additional Work to obtain proper compaction if in-place densities do not meet the specified densities. Retesting may be required by the ENGINEER.

D. Minimum Number of Tests

1. Trenches: Provide that a nuclear density compaction test is conducted by an independent compaction inspector making at least one field density test per compacted fill layer per day and every 200 linear feet of trench as directed by the ENGINEER or OWNER. Fully cooperate with compaction inspector.
2. Paved Areas and Building Subgrade: Make at least one (1) field density test of subgrade for every 2,000 square feet of paved area or building slab, but in no case less than three (3) tests.
3. Other Areas: In each compacted fill layer, make one (1) field density test for every 2,000 square feet of overlaying building slab or paved area, but in no case less than three (3) tests.

3.05 GRADING

- A. Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.
- B. Grade areas adjacent to structure lines to drain away from structures and to prevent ponding.
- C. Finish surfaces: Free from irregular surface changes and as follows.
 - 1. Lawn or Other Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10 feet above or below required subgrade elevations.
 - 2. Pavements: Shape surface of areas under pavement to line, grade, and cross-section, with finish surface not more than plus or minus 1-inch above or below required subgrade elevation.
 - 3. Fill Under Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2-inch when tested with a 10-foot straightedge.
- D. Compaction: After grading, compact subgrade surfaces to the percentage of maximum density for each area classification.

3.06 ROCK REMOVAL

- A. Notify ENGINEER immediately of change in classification. If bedrock is encountered above trench bottom grade or above subgrade elevation, expose bedrock surface to allow ENGINEER to perform an elevation survey and take cross-sectional measurements.
- B. Perform rock excavation by mechanical methods only, blasting is not allowed.
- C. Remove or partially remove boulders exposed on sides or bottom of excavations as directed by ENGINEER. Remove boulders to not less than 2-feet outside structure walls, not less than 12-inches outside footings, not less than 6-inches below underslab subgrade, not less than the lateral trench width payment lines indicated, and not less than 12-inches below underside of pipes. Refill depressions resulting from removal of boulders and rock with approved compacted bedding.
- D. Refill unauthorized rock excavations, or excavations made beyond or below indicated or directed excavation pay limits, with compacted bedding.
- E. Remove and dispose of unused rock and boulders off-Site.
- F. Remove and dispose of residual solids to limits shown on Drawings, as specified, or needed to complete Project in accordance with Laws and Regulations.

3.07 RIP RAP

- A. Place riprap to full depth of 1.5D 50 in one operation without special handwork, measured perpendicular to face of slope to obtain uniform appearance true to line and grade. Place larger stones at bottom of slope. Place stones in close contact, with interlocking of face stones and backing stones. Fill openings between stones with smaller stones. Embed, re-orient or discard loose stones or excessively large stones projecting above surface.

3.08 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

3.09 MAINTENANCE

- A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction. Immediately repair any subsequent settling and provide such maintenance for the remainder of the Contract at no additional expense to the OWNER.
- C. Prior to paving upon the sub-grade, remove soft or unsuitable material and replace with suitable backfill material. Bring low sections, holes, or depressions to the required grade with approved material. Shape entire sub-grade to line, grade, and cross-section and thoroughly compact.
- D. Provide erosion control measures in accordance with Laws and Regulations and in accordance with Division 01 General Requirements. Keep roads free of debris. Use suitable watertight vehicles for hauling wet materials over roads and streets. Clean up materials dropped from or spread by vehicles promptly or when directed by the ENGINEER.

3.10 DISPOSAL OF EXCESS MATERIALS

- A. Legally dispose of excess or unsuitable material at no additional cost to OWNER.

END OF SECTION

SECTION 31 23 19

DEWATERING AND DRAINAGE

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. The objective of this Section is to remove standing water from excavations as needed to perform the work as specified and collect water which may enter the excavation during Contractor's excavation activity.
2. A dewatering plan shall be prepared by a licensed Massachusetts Professional Geotechnical Engineer and submitted for review. Submittal of plan does not constitute approval.
3. If the Contractor chooses to discharge construction waters to the drainage system, the Contractor will obtain a NPDES Permit and shall be responsible for collecting and analyzing the requisite water samples to meet the Permit requirements. Contractor is responsible for providing this information to the proper regulatory authorities in a manner consistent with the requirements of the Permit.
4. Contractor shall repair damage caused by dewatering and drainage system operations, at no additional cost to the Owner.
5. Obtain and pay for all permits required for temporary dewatering and drainage system.
6. Furnish, install, operate, monitor, maintain and remove temporary dewatering and drainage systems as necessary to lower and maintain groundwater levels below subgrades of excavations. Prevent surface water runoff from entering or accumulating in excavations.
7. Collect and properly dispose of all water from dewatering and drainage systems in accordance with local, State and Federal requirements and permits.
8. Remove temporary dewatering and drainage systems when no longer needed. Restore all disturbed areas.

B. Related Sections

1. Earth excavation and backfill are included in Section 31 00 00 - EARTHWORK.
2. Demolition procedures are included in Section 02 41 00 – SITE DEMOLITION.
3. Submittals are included in Section 01 33 00 – SUBMITTAL PROCEDURES.

C. Definitions

1. Where the phrase “in-the-dry” is used in these specifications, it shall be defined as the in-situ soil moisture content, which will allow the excavated soils to be managed without the generation of free liquids.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES (NOT APPLICABLE)

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

- A. Shop Drawings for Information in accordance with Section 01 33 00 as part of the Work Plan: For dewatering system. Show arrangement, locations, and details of wells and well points; locations of headers and discharge lines; and means of discharge and disposal of water.
 1. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
 2. Include a written report outlining control procedures to be adopted if problems arise with the proposed system.
 3. Include Shop Drawings signed and sealed by the qualified professional engineer responsible for their preparation with geotechnical expertise, retained by the Contractor.
 4. Submittal will be for information only. The Contractor shall remain responsible for adequacy, safety, and compliance with appropriate local, state, and federal regulations, of construction means, methods and techniques.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

- A. Existing Conditions: per Division 01 General Requirements.
- B. Existing Utilities: Do not interrupt utilities serving facilities occupied by the User Agency or others unless permitted in writing by the Architect and then only after arranging to provide temporary utility services according to requirements indicated.
- C. Groundwater is anticipated to be encountered throughout construction.

PART 2 – PRODUCTS (NOT SPECIFIED)

PART 3 – EXECUTION

3.01 GENERAL

- A. Contractor shall control surface water and groundwater such that excavation to final grade is made in-the-dry, and bearing soils are maintained undisturbed, Contractor shall prevent softening, or instability of, or disturbance to, the subgrade due to water seepage.
- B. Contractor shall provide protection against flotation for all work.
- C. The impact of anticipated subsurface soil/water conditions shall be considered when selecting methods of excavation and temporary dewatering and drainage systems. Type of dewatering system, spacing of dewatering units and other details of this work shall address site specific conditions.
- D. Contractor shall take all necessary measures to prevent damage to adjacent structures, utilities, property(ies), and other features.
- E. Contractor shall modify, redesign, and/or replace the dewatering system at no additional cost to the Owner, if design criteria are not continuously and effectively fulfilled.
- F. Contractor shall repair damage to adjacent structures, utilities, and properties resulting from the operation of the Contractor's dewatering and treatment system, at no additional cost to the Owner.
- G. Contractor shall locate dewatering facilities where they will not interfere with utilities, the safe passage of traveled ways, or other work to be done on the Site under the Specifications.
- H. Contractor shall take all necessary precautions during dewatering activities to prevent adverse effects on the Site and on adjacent properties.

3.02 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.03 SURFACE WATER CONTROL

- A. Contractor shall control surface water runoff to prevent flow into excavations, and shall provide temporary measures such as dikes, ditches, and sumps.

3.04 EXCAVATION DEWATERING

- A. Contractor shall provide and maintain adequate equipment and facilities to remove promptly and dispose of properly all water entering excavations. Contractor shall keep excavations in-the-dry, so as to maintain an undisturbed sub grade condition throughout construction below grade, including backfill and fill placement.
- B. Contractor shall collect precipitation or surface runoff in shallow ditches around the perimeter of the excavation, drain to sump and pump from the excavation to maintain in-the-dry conditions.

- C. Dewatering and drainage operations shall at all times be conducted in such a manner as to preserve the natural undisturbed bearing capacity of the sub grade at the bottom of the excavation. If the sub grade becomes disturbed for any reason, the unsuitable sub grade material shall be removed and replaced with concrete, compacted granular fill, or other approved material to restore the bearing capacity of the subgrade to its original undisturbed condition.
- D. Dewatering and drainage operations shall be conducted in a manner that does not cause loss of ground or disturbance to the pipe bedding or soil that supports overlying or adjacent structures.

3.05 DISPOSAL OF DRAINAGE

- A. All water collected in temporary drainage systems will be collected in the dewatering system and disposed of in the same manner as the dewatered groundwater.
- B. The Contractor shall be responsible to ensure that such discharge does not lead to groundwater mounding or other conditions that are not in compliance with the Massachusetts Contingency Plan (310 CMR 40.0000) or the Massachusetts Groundwater Discharge Permit Program 314 CMR 5.00. If discharge is conducted in accordance with a Pretreatment Permit, Contractor is responsible for completing applicable laboratory analysis and maintaining compliance with all permit conditions. Contractor is also responsible for all consequences of non-compliance and/or permit violations. If discharge is completed through off-site disposal, the Contractor is responsible for completing all necessary laboratory analysis to ensure material is within the permit requirements of the accepting facility.

3.06 DISPOSAL OF DRAINAGE

- A. Other than the collected solids from filtration, any sediment, solids, sludge or soil which accumulates as a result of the dewatering operation, either within the dewatering equipment or external to it, shall be removed from the equipment and the Site and disposed of at no additional cost to the Owner.

END OF SECTION

SECTION 31 41 00

SHORING AND BRACING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Shoring and bracing necessary to protect existing buildings, utilities, and other improvements and excavation against movement due to caving.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. Occupational Safety & Health Administration (OSHA).
- B. State requirements set forth in Section 00 73 19.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.
1. Design calculations and drawings for shoring and bracing system and other data prepared and sealed by a professional ENGINEER registered in the location of the Project.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Provide design of shoring and bracing by professional ENGINEER registered in the location of the Project.

1.07 SITE CONDITIONS

- A. Existing Conditions: per Division 01 General Requirements.
- B. Survey condition of adjoining properties with ENGINEER. Take photographs, recording any prior settlement or cracking of structures, pavements, and other improvements. Prepare a list of such damages, verified by dated photographs, and signed by CONTRACTOR, ENGINEER, and others conducting the investigation.

- C. Survey adjacent structures and improvements, establishing exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations. Locate datum level used to establish benchmark elevations sufficiently distant so as not to be affected by excavation operations.
- D. During excavation, resurvey benchmarks weekly, employing licensed land surveyor or registered professional ENGINEER. Maintain accurate log of surveyed elevations for comparison with original elevations. Notify ENGINEER if changes in elevations occur or if cracks, sags, or other damage is evident.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Provide suitable shoring and bracing materials which will support loads imposed. Materials need not be new but should be in serviceable condition.
- B. Steel sheet piling and shapes (corners, etc.): Continuous interlocking type; section modules and type of section as required by design.
- C. Bracing members: Wood timbers or A36 steel members.
- D. Bolts: ASTM A307.

PART 3 – EXECUTION

3.01 GENERAL

- A. Provide system to resist earth and hydrostatic pressures, including surcharges from surface load in accordance with requirements set forth in Section 00 73 19.
 - 1. Wood Sheeting and Bracing: Provided as needed to make excavation safe and secure. Leave wood sheeting in place.
 - 2. Steel sheet piling: Provided as directed by ENGINEER and remove following completion of Work. Piling may remain in place when directed by the ENGINEER or at CONTRACTOR's option if approved by the ENGINEER.
 - 3. Movable box: Provide where a shoring system is required but steel piling is not called for.
- B. Locate shoring and bracing to clear permanent construction and to permit forming and finishing of concrete.
- C. Maintain shoring and bracing while excavation is open.
- D. Remove systems in stages to prevent disturbance of soils and damage to structures and improvements. Fill voids as soon as sheeting is withdrawn.

3.02 STEEL SHEET PILING AND BRACING

- A. Drive sheet piling prior to excavation where possible. Fill and compact voids outside sheeting to hold sides of excavation in place.
- B. Brace as required to prevent distortion of piling and other bracing members. If necessary to move a brace, install new bracing prior to removal of original brace.
- C. Cut off sheet piling to be left in place at least 5-feet below finish grade. Backfill in accordance with section 31 00 00.
- D. If achieving compacted backfill under or around utilities is not achievable, CONTRACTOR shall install flowable fill within the excavation, or as directed by the ENGINEER or OWNER.

END OF SECTION

SECTION 32 00 00

BITUMINOUS CONCRETE PAVEMENT, CURBING AND EDGING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Work under this section includes installation of bituminous concrete pavements, curbing and pavement markings for roadways and parking areas as shown on the Drawings. All existing pavement to remain, but damaged, as a result of the construction operations, shall be restored in accordance with the requirements of this Section. Trench fills for trench excavations through roadways shall consist of general pavement structures according to this Section.
2. The CONTRACTOR shall install all pavement and drives, which have been removed or damaged during construction operations. Pavement shall include satisfactory repair by the CONTRACTOR of driveways and any other surface disturbed by his/her operations by the same materials as removed or as specified herein. Driveway aprons, sidewalks, walkways, etc. shall be part of the work.
3. Items to be Installed:
 - a. Concrete Curbing
 - b. Granite Curbing
 - c. Pavement Markings
 - d. Bituminous Concrete Curbs
 - e. Bituminous Concrete Paving

B. Related Sections

1. Section 31 00 00 – EARTHWORK
2. Section 31 23 19 – DEWATERING AND DRAINAGE
3. Section 03 30 00 – CAST-IN-PLACE CONCRETE

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. All work specified in this Section shall conform to the Commonwealth of Massachusetts Standard Specifications for Highway and Bridges latest revision, herein referred to as "State Standards".
- B. American Society of Testing and Materials (ASTM) (latest edition):

1. C 33 Specification for Concrete Aggregates.
2. C 136 Method for Sieve Analysis for Fine and Coarse Aggregate.
3. C 140 Sampling and Testing Concrete Masonry Units.
4. C 144 Standard Specifications for Aggregate for Masonry Mortar.
5. C 936 Specifications for Solid Interlocking Concrete Paving Units.
6. C 979 Specification for Pigments for Integrally Colored Concrete.
7. D 698 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 5.5 lb. (24.4 N) Rammer and 12 in. (305 mm) drop.
8. D 1557 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 10-lb (44.5 N) Rammer and 18 in. (457 mm) drop.
9. D 2940 Graded Aggregate Material for Bases and Subbases for Highways or Airports.
10. C 29 Bulk Density and Voids in Aggregate Materials.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 PRODUCT HANDLING

- A. Use all means necessary to protect bituminous concrete pavement materials before, ongoing, and after installation, and to protect the installed work and materials of all other trades.
- B. In the event of damage, immediately make all repairs and replacements necessary as directed by the ENGINEER.

1.06 SUBMITTALS

- A. The CONTRACTOR shall submit to the ENGINEER, data showing gradation and composition of materials proposed.
- B. The bituminous concrete mix formula must be submitted to the ENGINEER prior to the initiation of paving operations.

1.07 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. For actual finishing of bituminous concrete surfaces and operation of the required equipment, use only personnel who are thoroughly trained and experienced in the skills required and whose prime occupation is this type of work.

- C. Existing paved areas damaged or removed shall be repaired or replaced, respectively, with the same materials and level of quality as on the Project.

1.08 SITE CONDITIONS

- A. Existing Conditions: per Division 01 General Requirements.

1.09 GUARANTEE/WARRANTY

- A. Material Guaranty: Before any contract is awarded, the Bidder may be required to furnish without expense to the ENGINEER complete statement of the origin, composition and manufacture of any or all materials proposed to be used in the construction of the work, together with samples, which may be subjected to the tests required by the ENGINEER to determine the quality and fitness of the material.

PART 2 – PRODUCTS

2.01 BITUMINOUS CONCRETE BINDER COURSE

- A. Bituminous Concrete Pavement Binder Course shall conform to the applicable subsections of Section 420, Class I Bituminous Concrete Base Course, Type I-1 of the Mass DOT Standard Specifications.

2.02 BITUMINOUS CONCRETE TOP COURSE

- A. Bituminous Concrete Pavement shall conform to the applicable subsections of Section 460, Class I Bituminous Concrete Pavement, Type 1 of the “Standard Specifications.”

2.03 PAVEMENT BASE

- A. Shall be processed gravel for subbase and shall conform to section M1.03.1 of the state standards.

2.04 SUBGRADE

- A. On-site material or imported material as specified in Section 31 00 00, EARTHWORK.

2.05 CONCRETE CURBING

- A. All curbing shall be placed so that areas behind curbs shall be graded smooth, and topsoil and seed shall be placed.
- B. Concrete curbs shall be in accordance with MASSDOT Standard Specifications M9.04.1 and installed in accordance with MASSDOT Std. Spec. Section 500.

2.06 GRANITE CURBING

- A. All curbing shall be placed so that areas behind curbs shall be graded smooth, and topsoil and seed shall be placed.

- B. Granite curbs shall be in accordance with MassDOT Standard Specifications M9.04.1 and installed in accordance with MassDOT Std. Spec. Section 500.
- C. Granite curb removed, reset, and otherwise reused shall be cleaned of any paints, coatings, concrete or soils prior to re-installation or stockpiling.

2.07 BITUMINOUS BERM / CURB

- A. Bituminous berm shall be Class I Bituminous Concrete, Type I-1 in accordance with MASSDOT Standard Specifications Section 470.

2.08 BITUMIN FOR TACK COAT

- A. Provide in accordance with MassDOT Standard Specifications for Highways and Bridges and Supplements, Division II, Section 460, and MassDOT Construction Standard Details.

2.09 HOT POURED RUBBERIZED ASPHALT SEALANT

- A. Provide in accordance with MassDOT Standard Specifications for Highways and Bridges and Supplements, Division II, Section 460, and MassDOT Construction Standard Details.

2.10 LOOP DETECTORS

- A. CONTRACTOR shall Coordinate with the OWNER before removing loop detectors. All equipment shall comply with the latest editions of Section 815 - Traffic Control Signals of the Standard Specifications, including Supplemental and Interim editions, NEMA, the Massachusetts Electrical Code, and applicable Underwriters Laboratories standards.

PART 3 – EXECUTION

3.01 GENERAL

- A. CONTRACTOR Requirements:
 - 1. The CONTRACTOR shall perform and complete the Work within the limits indicated in a continuous manner so that the pavement placement work may proceed without delay.
 - 2. The CONTRACTOR shall perform and complete the Work as shown on the Drawings and as specified in accordance with MassDOT Standard Specifications for Highways & Bridges.
 - 3. The CONTRACTOR shall, at all times, prior to acceptance of the work by the ENGINEER, maintain the completed work in a safe and satisfactory condition. All maintenance and repairs to the completed work shall be subject to the approval of the ENGINEER and the controlling municipal and State authorities. All maintenance and repairs of the completed work shall be provided by the CONTRACTOR at no additional cost to the ENGINEER.

4. Equipment used in the work will be subject to approval by the ENGINEER and shall be maintained in a satisfactory condition at all times. Unless otherwise permitted, compaction shall be performed by use of suitable power rollers. Finished surfaces of new asphaltic surface courses shall finish even with adjacent existing pavement surfaces and be free from surface irregularities.
 5. It shall be the responsibility of the CONTRACTOR to obtain from the controlling municipal authorities all required permits for cutting roadway pavements and to perform the work in accordance with all customs and requirements of the controlling authorities, in addition to those specified herein, and at no additional expense to the ENGINEER.
 6. Existing pavements outside of the indicated work limits which are damaged as a result of the CONTRACTOR's operations, including base courses, bituminous tack coats and surface courses, shall be replaced by the CONTRACTOR in accordance with the requirements specified herein for the respective type of pavement in a satisfactory manner and at no additional cost to the ENGINEER.
 7. In case of settlement or other defects in new or replaced pavements, the CONTRACTOR shall cut out, replace, restore, or repair the damaged pavements at no additional expense to the ENGINEER. This requirement shall remain in effect for 2 years after the acceptance of the work by the ENGINEER. The pavement area to be replaced, repaired, or restored, shall extend from edge of pavement to edge of pavement, a minimum of 20 feet on either side of the defect; final pavement course shall be feathered to provide a smooth finish detail.
 8. This Contract shall not be considered complete until the replacement, restoration and repair of pavements has been provided in a manner satisfactory to the ENGINEER, and in accordance with the requirements specified herein.
- B. All materials and each part of detail of the work shall be subject to inspection by the ENGINEER. The ENGINEER shall be allowed access to all parts of the Work and shall be furnished with such information and assistance by the CONTRACTOR as is required to make a complete and detailed inspection, (such assistance may include furnishing labor, tools, and equipment, at no expense to the ENGINEER.)
- C. If the ENGINEER so requests, the CONTRACTOR, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the CONTRACTOR shall restore said portions of the Work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering or the removing and the replacing of the covering or making good of the parts removed, will be at the CONTRACTOR's expense.
- D. Any work done or materials used without authorization by the ENGINEER may be ordered removed and replaced at the CONTRACTOR's expense. The CONTRACTOR shall furnish written information to the ENGINEER stating the original sources of supply of all materials manufactured away from the actual site of the work. In order to ensure a proper time sequence for required inspection and approval this information shall be furnished at least two weeks in advance of the incorporation in the work of any such materials.

- E. For the purpose of observing work that affects their respective properties, inspectors for the municipalities, public agencies and the utility companies shall be permitted access to the work, but all official orders and directives to the CONTRACTOR will be issued by the ENGINEER.
- F. The inspection of the work shall not relieve the CONTRACTOR of any of his obligations to fulfill the terms of the Contract as herein prescribed by the plans and specifications.
- G. Failure to reject any defective work or materials shall not in any way prevent later rejection when such defect is discovered, nor obligate the ENGINEER to make final acceptance.
- H. The CONTRACTOR shall give prior notice to the ENGINEER when work on the various items is to be performed by him or his SUBCONTRACTORS. If work is suspended on any item, prior notice shall be given to the ENGINEER before resumption of such work.

3.02 COLD PLANING OF BITUMINOUS ASPHALT PAVEMENTS

- A. This work shall consist of cold planing an existing bituminous plant mix pavement in accordance with the requirements of these Specifications and in reasonably close conformity with the lines and grades shown on the Plans or established by the Engineer.
- B. Equipment: All equipment necessary for the satisfactory performance of this work shall be on hand and approved before work will be permitted to begin. The required equipment shall include a power broom, a water truck, and a planing machine. Equipment shall be furnished to remove the material planed from the pavement. The planing machine shall be a power operated, self-propelled milling machine or grinder capable of removing bituminous concrete to the required width, depth, profile, cross-slope, and surface texture. The machine shall be capable of accurately establishing profile by referencing from either the existing pavement or from an independent grade control and shall have positive means for controlling cross-slope. The machine shall have a floating moldboard with sufficient down pressure to plane the milled surface. The machine shall have an effective means of removing cuttings from the pavement and for preventing dust from escaping into the air.
- C. The planing machine shall be equipped with a cutter drum at least 12 ft. (3.65 m) wide and be capable of restoring pavement profile with either a contact or noncontact leveling system. A contact leveling system shall be a minimum of 40 ft. (12 m) in length and the non-contact leveling system shall have a minimum of 3 sensors dispersed the length of the machine.
- D. The maximum spacing between teeth on the cutter drum shall not exceed 5/8 in. (15 mm). Supplemental equipment shall be provided as necessary to remove material in areas that cannot be reached by the planing machine.
- E. General Requirements. The operations shall be so arranged that no vertical longitudinal faces exceed 1-1/4 in. (32 mm) in height in areas to be used by public traffic. Transverse faces shall be tapered in a manner approved by the Engineer to avoid creating a hazard for traffic. The Contractor shall be required to cold plane in the direction of traffic. When milling roadways for hot mix overlays, the planing machine shall operate at a consistent forward speed to provide an acceptable surface texture. The maximum allowable forward speed shall be 60 ft. (18 m)/min when the teeth spacing is between 1/2 and 5/8 in. (13 and 15 mm), and the maximum allowable forward speed shall be 80 feet (24 m)/min when the teeth spacing is less than 1/4 in. (13 mm). After planing, the finished surface shall provide a smooth riding surface free from scallops, scabs,

gouges, ridges, oil film, and other imperfections of workmanship, having a uniform texture, and true to the required grade and cross section. The elevation of the longitudinal edges of adjacent cuts shall not differ more than 1/8 in. (3 mm).

- F. Milling shall not commence unless the subsequent layer of pavement can be placed within limitation specified in the State Specifications.
- G. The planed pavement shall be thoroughly swept immediately behind the machine and all materials swept up shall be loaded and hauled away. A water truck shall be furnished and used to control dust from the work, when deemed necessary by the Engineer. Where sound pavement has been gouged, torn, or otherwise damaged during the milling operations, or damage is done to any other property of any kind including utility frames, grates, and covers, repairs shall be made by the Contractor at no cost to the OWNER. The Contractor shall take appropriate measures so that the cold planing operation does not trap water.
- H. Surface Requirements. Where the planed pavement is not to be resurfaced, the texture shall be uniform throughout the project and shall provide a satisfactory riding surface. The average texture depth shall be no less than 0.20 in. (5 mm).
- I. The finished surface on the roadway shall be of uniform profile throughout, without any scabbing, scallops, gouges, ridges, or other imperfections resulting from worn cutter teeth, improper operating speeds, poor equipment maintenance, or other instances of poor workmanship. The cross-slope shall be as specified on the plans in the tangent, transition, and super-elevated curve sections. The finished surface after the final cut shall not show a deviation greater than 1/8 in. (3 mm) from a 10 ft. (3 m) straightedge, and the cross-slope shall not deviate more than 3/8 in. (10 mm) in 10 ft. (3 m). All irregularities exceeding these limits shall be corrected. Approaches and tapers shall be acceptably textured when required by the Engineer. Length, width, and depth of cut on approaches and tapers will be as determined by the Engineer. The approaches and tapers shall match the finished cut on the main line and shall be transitioned to the existing surface to within $\pm 1/8$ in. (3 mm). When deemed necessary by the Engineer, private entrances shall be transitioned to provide a smooth approach to the roadway. Unless otherwise specified on the plans, the cuttings shall become the property of the Contractor and be removed from the project.
- J. The accepted quantity of Cold Planed Bituminous Pavement will be paid for at the contract unit price, which payment shall be full compensation for all labor, materials, equipment, hauling, and incidentals necessary to plane the pavement, control dust, and dispose of the cuttings.

3.03 SUBGRADE PREPARATION

- A. Prepare subgrade by shaping and compacting to proper grade. Remove all soft and yielding material from the subgrade and replace with suitable material. Compact thoroughly using approved types of rollers or tampers. Ensure that all areas are stable and dry.
- B. Saw cut edges of existing pavement along even, straight lines to obtain undisturbed, clean, and sound vertical edges of original pavement.
- C. Do not store or stockpile materials on the subgrade.

- D. The CONTRACTOR shall mill a keyway edge into existing asphalt along any trench excavations and final pave the top course of asphalt into said keyway, bridging the trench limits by a minimum of twelve inches on either side.
- E. The subbase to be placed under pavement shall consist of at least 12 inches of base course as specified in Section 31 00 00 - Earthwork, evenly spread and thoroughly compacted.
 - 1. Compaction of the subbase shall be in accordance with Section 31 00 00 Earthwork

3.04 PAVEMENT

- A. The CONTRACTOR shall install all pavement materials in accordance with Massachusetts Highway Standard Specification Section 400.
 - 1. All thicknesses are measured after rolling. The permanent surface course shall be evenly spread and rolled with a power roller having a minimum weight of 5 tons.

3.05 COMPACTION

- A. The CONTRACTOR shall conform to the State Standards for pavement operations, including compaction (401.03.10).
- B. Immediately after the bituminous mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling. The surface shall be rolled when the mixture is in the proper condition and when rolling does not cause undue displacement, cracking, and shoving.
- C. The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction while the mixture is in a workable condition. Rolling shall be continued until all roller marks are eliminated and the minimum densities have been obtained based upon 95 percent of laboratory Marshall Densities made in the proportions of the job-mix formula, AASHTO T-245.
- D. Steel-Tired, Static Weight Rollers: The maximum roller speeds for steel-tired static- weight rollers for various operations shall not exceed three miles per hour. The wheels of steel-wheel rollers shall be kept moist and clean to prevent adhesion of the fresh material, but an excess of water will not be permitted.
- E. Vibratory Rollers: The maximum roller speed for vibratory rollers shall be that which provides impact spacing less than the compacted lift thickness. When vibratory rollers are used in the static mode, roller speed shall not exceed three miles per hour.
 - 1. When an approved vibratory roller is used for breakdown rolling in a vibratory mode, intermediate rolling will not be required. When the vibratory roller is used for finish rolling it shall be used in the static mode. Rolling shall progress continuously until the specified density of the corresponding daily plant Marshall Density, AASHTO T-245 has been attained. Finish rolling shall continue until all roller marks are eliminated.
- F. Unless otherwise directed, rolling shall start longitudinally at the sides and gradually progress toward the center of the pavement.

- G. The motion of the rollers shall be slow enough at all times to avoid displacement of the hot mixture. Any displacement resulting from reversing the direction of the rollers or from any other cause shall be satisfactorily corrected.
- H. When the base course or binder course fails to comply with the density requirements herein specified, additional compaction may be applied when permitted and as directed, to attain the required density. If satisfactory density cannot be attained the CONTRACTOR shall be required to remove and replace, at his own expense, any affected area, which is proven to be structurally inadequate and/or incapable of maintaining material integrity.
- I. Any mixture that becomes loose and broken, mixed with dirt, or is in any way defective, shall be removed and replaced with fresh hot mixture, which shall be compacted to conform to the surrounding area. Any area showing an excess or deficiency of bituminous material shall be removed and replaced.
- J. In the event of dispute as to the creditability of the results, density shall be determined from cores taken from the pavement.

3.06 FIELD QUALITY CONTROL

- A. Thickness: Test in-place asphalt concrete courses for compliance with requirements for thickness. Repair or remove and replace unacceptable paving as directed by the ENGINEER. In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness.
- B. Compaction:
 - 1. The Bituminous mixture shall be compacted to at least 95% of the density achieved on the laboratory testing of the design mix for the project.
 - 2. Density will be checked by the Nuclear Density gage Method, ASTM 2950.
- C. Guarantee: During the two-year guarantee period, the CONTRACTOR shall maintain the surfacing and shall promptly fill with similar material in compliance with the above specifications, any depressions and hold that may occur so as to keep the surfacing in a safe and satisfactory condition for traffic.

END OF SECTION

SECTION 33 10 00

WATER DISTRIBUTION PIPING

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes water-distribution piping and related components outside the building for water service mains.
- B. This Section specifies requirements for furnishing and installing cement lined ductile iron (CLDI) & C900 Polyvinyl Chloride (PVC) water main pipelines complete and in place for water distribution.
- C. All CLDI water-distribution main piping shall be wrapped in poly-wrap as indicated herein.
- D. All fittings located in areas of C900 water main pipe to be installed and wrapped with wax tape as indicated herein.
- E. The CONTRACTOR shall pay for all costs and fees related to the construction of new water system components and connecting the new water system components to the existing water system including all tap-in, testing and inspection fees and shall file all applications, details and drawings required by the local authority having jurisdiction.

1.02 RELATED DOCUMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings, General Conditions, Supplementary Conditions, and Sections in all Divisions of these Specifications.
 - 1. Section 31 00 00 Earthwork
 - 2. Section 33 20 00 Water Service Connections
 - 3. Section 22 00 00 Plumbing

1.03 REFERENCES

- A. All work specified in this Section shall conform to the Town of Manchester-By- The-Sea standards.
- B. American Water Works Association (AWWA), latest editions of:
 - 1. AWWA C104: Standard for Cement Mortar Lining.
 - 2. AWWA C111: Standard for Rubber Gasket Joints.
 - 3. AWWA C150: Standard for the Thickness Design of Ductile Iron Pipe.

4. AWWA C151: Standard for Ductile Iron Pipe, Centrifugally Cast.
5. AWWA C153: Standard for Ductile Iron Compact Fittings.
6. AWWA C600: Standard for Installation of Ductile Iron Water Mains and Their Appurtenances.
7. AWWA C651: Standard for Disinfecting Water Mains.

1.04 SUBMITTALS

- A. Product Data and Shop Drawings: For each type of product indicated. Submitted and approved by the ENGINEER and the Town of Manchester-By-The-Sea.
- B. Field quality-control test reports and disinfection notification: The CONTRACTOR shall notify and subsequently provide the test reports to the OWNER upon completion of the disinfection and pressure testing. Pressure testing shall be observed by the ENGINEER.
- C. Operation and Maintenance Data: For water valves and specialties to include in emergency, operation, and maintenance manuals.
- D. A copy of any permits required by local authorities having jurisdiction shall be submitted to the OWNER prior to commencing work on the water system.
- E. Certificate of Compliance:
 1. Each shipment of piping, valves, or appurtenances shall be accompanied with the manufacturer's notarized certificate certifying conformance with the requirements of the Specifications.

1.05 PERMIT

- A. The CONTRACTOR shall setup a Preconstruction Meeting with the OWNER to finalize approval of layout and details prior to commencing work.
- B. The CONTRACTOR shall obtain all permits required to perform work on the water system without expense to the OWNER.

1.06 QUALITY ASSURANCE

- A. Regulatory Requirements:
 1. Comply with applicable requirements of the OWNER including requirements pertaining to the tapping of water mains and backflow prevention.
 2. Comply with applicable OWNER'S standards for potable-water-service piping, including materials, installation, testing, and disinfection.
 3. Comply with MassDEP requirements for water distribution systems.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

- C. All water pipe and appurtenances shall be “American Made;” certificates of compliance shall be provided by manufacturer and provided to the Town.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. All delivery, storage, and handling of pipe, valves, hydrants, and appurtenances shall be in accordance with manufacturer’s recommendations.
- B. Preparation for Transport: Prepare valves according to the following:
 - 1. Ensure that valves are dry and internally protected against rust and corrosion.
 - 2. Protect valves against damage to threaded ends and flange faces.
 - 3. Set valves in best position for handling. Set valves closed to prevent rattling.
- C. During Storage: Use precautions for valves, according to the following:
 - 1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
 - 2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
- D. Handling: Use sling to handle valves if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points. Do not lift valves with bear metal chains.
- E. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- F. Protect stored piping from moisture and dirt. Elevate above grade.
- G. Protect flanges, fittings, and specialties from moisture and dirt. Piping or materials damaged during delivery storage or handling shall be replaced at the expense of the CONTRACTOR.

1.08 PROJECT CONDITIONS

- A. Provide underground water distribution piping as outlined in this section and as demonstrated on the Drawings.

1.09 COORDINATION

- A. Coordinate connection to existing water system with the Town of Manchester-By- The-Sea DPW.
- B. 24-hour notice must be given to the Town for water shutdowns. One 8-hour shutdown will be permitted for each street tie-in to existing water mains.

- C. The CONTRACTOR shall contact "Dig Safe" at 1-888-Dig-Safe to verify locations of existing underground utilities in areas of proposed excavation prior to commencing any excavation effort.
- D. The CONTRACTOR shall coordinate any work on the water system with the Town of Manchester-By-The-Sea prior to commencing any work on the existing and proposed water system.

1.10 MARKING

- A. Marking of all pipe shall conform to the requirements of AWWA C151, latest revision, and marking of all fittings shall conform to the requirements of AWWA C153, latest revision.

1.11 MANUFACTURER'S REPRESENTATIVE

- A. The CONTRACTOR shall furnish at no additional expense to the OWNER, the services of pipe manufacturer's representatives for instruction of the CONTRACTOR's personnel who will be installing the pipe. The instruction shall include proper handling, installation, and jointing and other construction areas, and shall be for such lengths of time required to fully familiarize the CONTRACTOR's personnel with the proper techniques.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All water appurtenances are to be American made.
- B. All materials shall be reviewed and approved prior to installation by the ENGINEER.

2.02 DUCTILE IRON PIPE

- A. Type: Class 56 DI pipe in accordance with AWWA C150/A21.50 and C151/A21.51 with factory applied bituminous coatings in accordance with AWWA/ANSI C151, double cement lined in accordance with AWWA/ANSI C104/A21.4, push-on joint or mechanical joint type, unless otherwise specified on Drawings.
- B. Supply pipe in 18 to 20-foot lengths and permanently mark with manufacturer, date of manufacture, size, type, class/wall thickness, and standard produced to.
- C. Mechanical joint: AWWA/ANSI C111/A21.
- D. Restrained joints: AWWA M41.
- E. Design accessories for complete piping system: AWWA/ANSI C111/A21.11.
- F. Restrained gland gaskets: per manufacturers' recommendations for maximum pressures in pipe.

2.03 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

- A. AWWA C900 PVC pipe shall be a minimum of DR 18 and shall be capable of withstanding a 235 PSIG working pressure. Pipe shall conform to AWWA C-900-07 and shall be UL and FM approved for sizes 4" thru 12". Pipe shall be solid walls with standard laying length of 20'. The pipe shall

have bell and spigot ends with push-on, O-ring rubber gasket, compression type joints conforming to the requirements of ASTM D3139. Elastomeric gaskets shall conform to the requirements of ASTM F477 and be color coded blue.

- B. Pipe shall be Blue Brute as manufactured by Ipex or ENGINEER approved equivalent.

2.04 HYDRANTS

- A. Hydrants shall be Darling B-84-B, 5/1/2 or approved equal.
- B. The hydrant shall have a 5-1/4" valve opened by turning the operating unit in the counterclockwise direction. The hydrant shall have one 4-1/2" pumper and two 2-1/2" hose connections.
- C. The draining system of the hydrant shall be bronze and positively activated by the main operating rod.
- D. Hydrant drains shall close completely after no more than three turns of the operating nut.
- E. Drain shutoff to be by direct compression closure
- F. Hydrant shall be painted in accordance with OWNER'S color requirements.

2.05 FITTINGS

- A. Fittings and plugs for use with the ductile iron pipe specified shall be ductile iron, cement lined, bituminous coated with a working pressure rating of not less than 250 psi, conforming to AWWA C153, latest revision, and shall have mechanical joints.
- B. The exterior of all fittings, plugs, bolts, and nuts shall be coated with two (2) coats of heavy-duty epoxy protective asphaltic coating after assembly.
- C. Fittings to be used with C900 water main shall be Fusion Bonded Epoxy Coated Ductile Iron with Epoxy Coated Wedge Action Restraints.
- D. All Hardware in areas of C900 piping shall be SS304.

2.06 TAPE COATING

- A. Tape Coating to be used on all fittings in areas of C900 piping shall be #1 Wax-Tape as manufactured by Trenton or approved equal.
- B. Tape coating shall be a composite of wax and synthetic fiber fabric and shall be compatible with steel, ductile iron, and PVC materials, suitable for below grade use to prevent corrosion of metallic materials. It must be able to form around bolts and other hardware and into crevices and irregular surfaces. It must remain flexible and provide exceptional waterproofing and must be made of inert materials that will not deteriorate. Thickness shall be 7-90 mils suitable to temperatures ranging from - 50°-120°F.
- C. Primer shall be wax tap Primer as manufactured by Trenton, or approved equal, designed with corrosion inhibitors, and made to displace moisture and ensure adhesion of the tape.

2.07 JOINTS

- A. Push-on and mechanical type joints for pipe as specified above shall conform to AWWA C111, latest revision. Gasket material for all jointing requirements shall be styrene butadiene (SBR).
- B. Lubrication Material is to be food grade quality, kept in original container, and stored according to manufacturer's recommendations.

2.08 UNDERGROUND WARNING TAPE

- A. Furnish detectable marking tape with aluminum core, minimum 6 inches wide and minimum 5 mils thick with APWA uniform color-coding for identification and location. Text or lettering: "CAUTION BURIED POTABLE WATER LINE BELOW" repeated continuously along length of tape at maximum intervals of minimum 3 feet.

2.09 CEMENT MORTAR LINING

- A. Ductile Iron Interior pipe and fitting surfaces shall be covered with a double cement-mortar continuous lining not less than 1/16" thick, of materials, and applied in accordance with AWWA/ANSI C104/A21.4, latest revision.

2.10 STORAGE OF MATERIALS

- A. Pipe and related materials shall be stored in locations and in a manner approved by the ENGINEER. The locations and manner of storage shall be as to minimize handling of the materials.
- B. Gaskets are to be stored out of direct sunlight in their original packaging and protected from temperature extremes.
- C. The CONTRACTOR shall, at all times, be solely responsible for the safe storage of all materials.

2.11 TESTING

- A. Manufacturer Testing:
 - 1. Testing of ductile iron pipe shall be done in accordance with AWWA C151, latest revision.
 - 2. Testing of ductile iron fittings shall be done in accordance with AWWA C153, latest revision.
 - 3. Testing of jointing material shall be done in accordance with AWWA C111, latest revision.
 - 4. Testing of the interior coating shall be done in accordance with AWWA C104, latest revision.
 - 5. Certified test reports shall be submitted by the pipe manufacturer.
 - 6. The ENGINEER shall be notified at least ten (10) days in advance of the date and location of the testing in order to witness the tests if they desire.

7. The CONTRACTOR shall furnish to the ENGINEER notarized test reports by an independent testing laboratory, which show compliance of all materials furnished to the requirements specified herein. The test reports shall indicate results and methods employed.

B. Field Testing.

1. Field testing of ductile iron pipe installed for water service shall be performed according to the requirements as specified in Section 3.8 of this specification.

2.12 JOINT RESTRAINT

- A. Thrust Blocks are to be designed appropriately for the soils, pipe sizes, and pressures encountered at the job site and are to be installed square and plumb against undisturbed soil so that the joint itself, including any bolts, is accessible. Concrete is to be a minimum compressive strength of 2,000 psi and installed to industry standards. The use of large stones or discarded curbing as thrust restraint is not allowed.
- B. Restraining devices shall be utilized on all mains under the following conditions:
 1. Pipeline direction changes (tees, bends).
 2. Dead end lines (caps, plugs, valves).
 3. Transition pieces (reducers).
- C. Thrust restraint may be provided via restrained joint, ductile iron pipe meeting ANSI/AWWA C153, AWWA C151/A21.512, AWWA C111/A21.11, and be approved for use by the OWNER. Restrained joint pipe lengths (restrained length) shall be sufficient to restrain thrust imparted by 1½ times the anticipated working pressure but not less than 250 psi and may be more than one full length of pipe.
- D. Thrust restraint utilizing tie-rods may be used alone or in combination with other restraint systems and are to be installed only when and as directed by the Town of Manchester-By-The-Sea authorized field staff. All rods shall be protected from corrosion with two coats of bituminous paint or epoxy prior to backfilling.

2.13 TAPPING SLEEVES AND TAPPING VALVES

- A. All tapping sleeves shall comply in all respects to AWWA Standard C-110 and the following design standards:
 1. Tapping sleeve shall be installed at the location of the existing water main as shown on the plans and details.
 2. The tapping sleeve shall be a mechanical type joint to provide pressure - tight installation and be suitable for use with the existing pressurized pipe material. Outlet flange shall be Class 125C, ANSI B16.1.
 3. Mechanical joint tapping sleeves shall have totally confined end gaskets and be designed to withstand a minimum of 250 psi. working pressure.

4. Tapping valves shall comply with Section 2.10 - Gate Valves except one end shall be flanged and the other mechanical.
5. Tapping valves shall be provided with an oversized opening to allow the use of full-size cutters.

2.14 GATE VALVES

- A. Resilient seated gate valves shall meet AWWA C-515 and be UL listed and FM approved. This valve shall be ductile-iron-body, bronze mounted, nonrising stem, 4 inch through 12 inch in diameter as shown on the plans and details. All valves are to be mechanical joint.
- B. Sizes 4 inch through 12 inch shall be suitable for a test pressure of 250 psi.
- C. Valve shall have a minimum of two O-ring stem seals.
- D. Bonnet and gland bolts and nuts shall be 304 stainless steel for corrosion resistance.
- E. The interior and exterior of valves shall be fully epoxy coated 8 mils thick.
- F. Gate valves shall be as manufactured by Mueller or equivalent and open right or as directed by the OWNER.
- G. Gate valves shall be ductile-iron-body, bronze-mounted solid-wedge gate valves, with bell or mechanical joint ends. Valves shall conform to AWWA Standard Specification for Gate Valves, three (3) inch through forty-eight (48) inch for water and other liquids, Designation C500. They shall be double disk type.
- H. Buried valves shall be inside-screw, non-rising stem, having bell or mechanical- joint ends and two (2) inch square operating nuts.
- I. Bronze gate-rings shall be fitted into grooves of dovetail or similar shape in the gates. For grooves of other shapes, the rings shall be firmly attached to the dates with bronze rivets.
- J. Turning direction of the operating nuts shall be coordinated with the OWNER
- K. O-ring stuffing boxes shall be used.
- L. The T-handle wrenches shall be furnished with each gate valve which shall permit operation from a standing position. Coordinate with the Town of Manchester-By- The-Sea DPW personnel for a total desired quantity of wrenches.
- M. All valve boxes shall be adjusted to the final grade.

2.15 ACCESSORIES

- A. Refer to Section 33 20 00 for additional accessories specifications.
- B. Accessories shall conform to the requirements of ANSI/AWWA C800 unless otherwise noted.

1. Corporation Stops shall be CC thread by compression connection
2. Curb Stops shall be compression connection
- C. Curb Stops shall be ball valve style and have ends as required to suit type of pipe or tubing to be connected and a combined cap and tee handle
- D. Curb Boxes shall be buffalo style, 2 ½", cast iron, heavy duty top section, sliding type with flare top and recess cover marked "WATER" and sliding type arched bottom section.

2.16 STRAIGHT AND TRANSITION PIPE COUPLINGS

- A. The center sleeve and end rings of couplings shall be made of ductile iron, meeting, or exceeding ASTM A536. The coupling shall accommodate the entire O.D. range in the specified size by use of interchangeable color-coded end rings and gaskets.
- B. The coupling gasket shall be made of virgin rubber compound for water use. The SBR shall meet or exceed ASTM D2000-3-BA715. The gasket shall have raised lettering, sizing, and state the proper color code for the appropriate end ring.
- C. The coupling shall be equipped with stainless steel bolts, washers, and nuts and conform to the latest edition of the AWWA specification designation C-111 and C- 219-06.
- D. Straight couplings shall be as manufactured by Ford Model FC1-SH, Smith Blair Model 441, Romac Model 501, Cascade Waterworks Model CDC, or equivalent.
- E. Transitional couplings shall be as manufactured by Ford Model FC2A-SH, Smith Blair Model 441, Romac Model 501, Cascade Waterworks Model CTC, or equivalent.
- F. Straight connections between two ductile iron pipe sections shall be made by ductile iron solid sleeves.

2.17 VALVE BOXES AND COVERS

- A. Cast iron valve boxes shall be two-piece adjustable style, sliding type. Barrel inside diameter shall be 5¼ inches with 26-inch top section and 48-inch bottom section lengths adjusted to finish grade.
- B. Covers shall be cast iron, 5¼ inch, with the word "WATER" and a direction to open arrow imprinted thereon. Covers shall be the heavy, non-tilting 2" drop style recessed in the top to prevent plow breakage. The boxes and covers shall be compatible with the valves to which they attach.
- C. An approved operating key shall be provided to the OWNER.

2.18 LIQUID CHLORINE

- A. Liquid chlorine shall conform to AWWA Standard B301, current edition. Liquid chlorine shall be NSF 60 certified for potable water use.

2.19 HYPOCHLORITE

- A. Hypochlorite shall conform to AWWA Standard B300, current edition. Hypochlorite shall be NSF 60 certified for potable water use.

2.20 BACKFLOW PREVENTER

- A. Backflow prevention device used temporarily for any connection between the existing water system and new water pipes prior to acceptance of pressure test, disinfections and flushing, shall be of the appropriate size and shall be double check-reduced pressure type as manufactured by Watts, Febco, Hersey or equivalent. Backflow preventers shall be testable. Permanent backflow prevention devices to be installed as part of this project are specified in the plumbing specifications of this Contract.

2.21 POLY WRAP

- A. Polyethylene encasement for ductile iron pipe shall have a minimum thickness of 8 mils and shall be linear low density, flat tube, virgin polyethylene film that meets or exceeds the requirements of AWWA C105-10, ANSI A21.5-10, ASTM D4976 and NT4112-10.
- B. The film shall be marked showing trademark, year of manufacture, type of resin, specification conformance, applicable pipe sizes and a corrosion protection warning.

PART 3 – EXECUTION

3.01 EARTHWORK

- A. Refer to Section 31 00 00 - Earthwork for excavating, trenching, and backfilling.

3.02 SERVICES

- A. Refer to Section 33 20 00 – Water Service Connections.

3.03 INSTALLATION

- A. Prepare subgrade by shaping and compacting to proper grade. Remove all soft and yielding material from the subgrade and replace with suitable material. Compact thoroughly using approved types of rollers or tampers. Ensure that all areas are stable and dry.
- B. Pipe, valves, sleeves, hydrants, accessories, and appurtenances shall be new and unused, and shall be of the types and materials specified, as indicated, or as directed.
- C. The interior of pipe and fittings shall be thoroughly cleaned of foreign matter before being lowered into the trench and shall be kept clean during laying operations.
- D. Piping, valves, sleeves, and other appurtenances shall be constructed in dry trenches and shall not be laid when the conditions of the trench or the weather is unsuitable for such work.

- E. The trench bottom and bedding shall be shaped and compacted to give substantially uniform unyielding circumferential support to the lower fourth of the full length of each pipe.
- F. Holes for the bells shall be excavated so that after placement the pipe and coupling receives uniform bearing pressure from the trench bottom.
- G. Each pipe shall be laid to the line and grade and in such a manner as to form a close concentric joint with the adjoining pipe and to prevent sudden offsets of the flow line. Joint deflections are limited to 80% of the values specified in AWWA C600-99 Table 3 and 4.
- H. As the work progresses, the interior and exterior of the pipes and couplings shall be cleaned of all dirt and superfluous material of every description. Any damage to bituminous coating shall be repaired prior to backfill.
- I. When required to keep interior of pipe clean, a suitable drag shall be kept in the pipe and pulled forward past each joint immediately after the jointing has been completed.
- J. At times when work is not in progress, open ends of pipe and fittings shall be securely closed with a watertight plug so that no trench water, earth, or other substance will enter the pipe or fitting.
- K. Any pipe, valve, sleeve, or appurtenance that has been disturbed after laying shall be taken up and re-laid.
- L. All materials found to be defective during the progress of the work will be rejected by the ENGINEER or Town and the CONTRACTOR shall promptly remove such defective material from the site of the work and replace with new material at no additional expense to the OWNER.
- M. The CONTRACTOR shall be responsible for the safe storage and proper handling of all materials.
- N. No shims or mounds of earth shall be used to raise the pipe to grade.
- O. All pipes, valves, sleeves, and appurtenances shall be maintained accurately to the required line and grade.
- P. No pipe, valves, sleeves, and appurtenances shall be covered until the Town of Manchester-By-The-Sea has inspected the joints.
- Q. The pipeline shall not be used to convey trench drainage during construction.
- R. Pipes shall be protected at all times during construction against flotation. They shall be thoroughly secured, properly supported, and bedded to prevent settlement or disturbance. Compaction of bedding and backfill material shall be in strict accordance with Section 31 00 00 - EARTHWORK.
- S. Bends, crosses, tees, caps, plugs, valves, and other appurtenances shall be strapped and clamped where indicated. Steel bars, rods and plates shall be of structural steel. Straps, bridle rods, clamps, anchors, and such other parts shall be provided to the details. After installation, all parts of the strapping and clamping devices shall be given two (2) heavy coats of an approved coal-tar base protective coating.

- T. All lumps, burrs, excessive coatings, and irregularities on the plain and socket ends of the pipe, valves, sleeves, and appurtenances shall be removed.
- U. Field cutting of the pipe is to be square and free of any burrs and defects.
- V. Water lines shall be laid with a minimum horizontal separation of 5 feet from all utilities and 10 feet from sewer lines. Sewer lines crossing over water lines shall be concrete encased for 10 feet on either side of crossing regardless of vertical separation distance. Sewer lines crossing under water lines shall be constructed with a minimum vertical separation of 18 inches. When this cannot be achieved, the sewer shall be encased in concrete for 10 feet on either side of crossing. Encasement shall be a minimum of 6 inches around the sanitary sewer.
- W. Bury piping with depth of cover over top at least 54 inches.
 - 1. If bury depth is not achievable, install ridged insulation over main in accordance with AWWA standards or as directed by OWNER or ENGINEER.
- X. Connect to water-supply source and construct water-service piping to a point 5 feet from the outside face of the building wall in locations and pipe sizes indicated on the Drawings. It is the responsibility of the plumber to construct the required piping from this point through the building wall.
- Y. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, gaskets, thrust blocks, anchors, tie-rods (if allowed by the Town) and clamps, and other supports.
- Z. Valves shall be set in the pipeline as directed. Blocking or supports of a permanent nature shall be placed under each valve to ensure against settlement.
- AA. Each valve shall be tightly closed before being placed in the line and shall remain so until the joints on each side are completely tightened.
- BB. General:
 - 1. All tapping sleeves, valves and accessories shall be carefully inspected by the CONTRACTOR for defects before installation and all defective, unsound, or damaged materials shall be rejected.
 - 2. The OWNER will make such additional inspections as he deems necessary, and the CONTRACTOR shall furnish all necessary assistance for such inspection.
 - 3. Proper implements, tools, and facilities satisfactory to the OWNER shall be provided by the CONTRACTOR for the proper and satisfactory execution of the work.
- CC. All work shall be completed in conformance with the OWNER'S requirements.
- DD. Tapping sleeves and valves shall be constructed in dry trenches and shall not be laid when the conditions of the trench or the weather is unsuitable for such work.

- EE. Tapping sleeves, valves and couplings shall be laid to the line and grade in such a manner as to form a close concentric joint with the adjoining pipe and to prevent sudden offsets of the flow line.
- FF. Any tapping sleeves or valves that have been disturbed after laying shall be taken up and relayed.
- GG. All materials found to be defective during the progress of the work will be rejected by the OWNER and the CONTRACTOR shall promptly remove such defective material from the site of the work and replace with new material at no additional expense to the OWNER.
- HH. The CONTRACTOR shall be responsible for the safe storage and proper handling of all materials.
- II. Tapping sleeves shall be installed where indicated or as directed by the OWNER and shall be installed according to the manufacturer's recommended procedures.
- JJ. Valves and joint restraints shall be installed where indicated or as directed by the OWNER and shall be installed according to the manufacturer's recommended procedures.
- KK. All ductile iron piping shall be wrapped in polyethylene encasement. There shall be no less than 5 feet of overlap of the encasement at the pipe joints. Polyethylene encasement shall be provided in accordance with section 2.16 of this specification.
- LL. Service tubing shall be installed with care to avoid kinks or sharp bends. Do not allow tubing to contact ledge, rock or sharp stones which could cause damage.
- MM. Install restrained gland gaskets per manufacturers' recommendations for maximum pressures in pipe.

3.04 INSPECTION

A. General.

1. All pipe shall be installed in accordance with AWWA C600, latest revision and manufacturer requirements, and in accordance with the OWNER'S requirements.
2. All pipe and accessories shall be carefully inspected by the CONTRACTOR for defects before installation and all defective unsound or damaged materials shall be rejected.
3. The ENGINEER will make such additional inspections as he deems necessary, and the CONTRACTOR shall furnish all necessary assistance for such inspection.
4. Proper implements, tools, and facilities satisfactory to the ENGINEER shall be provided by the CONTRACTOR for the proper and satisfactory execution of the work.
5. The workmanship, materials, and installation are subject to inspection and approval by Town of Manchester-By-The-Sea authorized field staff. No installation shall be backfilled prior to inspection.

6. The ENGINEER and OWNER reserve the right to stop work on any water main installation for failure to abide by OWNERS standards until deficiencies are corrected.

3.05 JOINTING

- A. No pipes shall be jointed until couplings and ends of pipe have been inspected to determine that the joint surfaces are free from any defects in materials or workmanship, and free from dirt or other foreign matter.
- B. Pipe, pipe fittings and accessories shall be stored, installed, joined, and protected by the CONTRACTOR in strict accordance with the printed recommendations of the manufacturer of the piping material.
- C. Field assembled joints shall be checked with a suitable gauge as recommended by the manufacturer to ensure that the rubber rings are properly located.
- D. If inspection indicates that the rings are improperly located, the CONTRACTOR shall disassemble, and properly reinstall the pipe.
- E. Pipe stoppers shall be installed, sealed, and blocked in such a manner as to prevent any leakage and so as to withstand an internal hydrostatic pressure of not less than 5 psi.
 1. Timber blocking shall be of adequate size and arrangement to prevent the stopper from being blown off the line.
 2. Timber bracing shall extend back to the undisturbed end of the trench.

3.06 IDENTIFICATION

- A. Install continuous underground detectable warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping.

3.07 RECORD DRAWINGS

- A. All installed underground utilities shall be designated on as-built drawings by the CONTRACTOR of record and provided to the OWNER and ENGINEER in AutoCAD electrical format prior to completion of the project. All as-built drawings, (underground and above ground) shall be dimensioned from permanent benchmarks such as existing buildings and include depths at various points throughout the extent of the work, and invert elevations at all structures.

3.08 SETTING VALVES AND VALVE BOXES

- A. Valves shall be set in the pipelines as directed. Blocking or supports of a permanent nature shall be placed under each valve to ensure against settlement.
- B. Maximum spacing between valves shall be 600 feet.
- C. Each valve shall be tightly closed before being placed in the line and shall remain so until the joints on each side are completely tightened.

- D. Valve boxes shall be set for all valves. They shall be carefully fitted together and to the valve and securely held during backfilling. They shall be centered over the valve-operating nut. The bedding material around them shall be thoroughly tamped in place and the box cover set to the finished grade.

3.09 TESTING

- A. Alignment Tests: Each section of pipe will be checked by the OWNER or the ENGINEER in order to determine whether any displacement of the pipe has occurred. The CONTRACTOR shall provide suitable assistance to the OWNER or the ENGINEER. The CONTRACTOR shall repair any poor alignment, displaced pipe or other defects discovered, as directed by the ENGINEER.
- B. Hydrostatic Tests: After the pipe has been laid and the trench has been backfilled, all newly laid pipe or any valve section thereof, shall be subjected to a pressure and leakage test in accordance with AWWA C600-latest edition and as approved by the ENGINEER. The CONTRACTOR shall provide all pumps, pipe, connections, gages, measuring devices, and all other apparatus necessary for the test and shall conduct the test in the presence of and to the satisfaction of the ENGINEER. The OWNER will supply water to the CONTRACTOR for testing purposes at no expense to the CONTRACTOR.
 - 1. Test Pressure - The required minimum test pressure shall be 1-1/2 times the working pressure measured at the point of lowest elevation of the pipeline and corrected to the elevation of the test gage but shall not be less than 150 psi. Test pressures shall not vary by more than plus or minus 5 psi for the duration of the test.
 - 2. Duration of Test - two (2) hours minimum.
 - 3. Air Removal - Prior to performance of the test the pipeline shall be completely filled with water for a period of 72 hours. Expel air by means of air relief valves, hydrants or other means as required. If permanent air vents or taps are not located at all high points, the CONTRACTOR shall install corporation stops at such points so air can be expelled. After the tests are completed, plug all temporary taps.
 - 4. Allowable Leakage:
 - a. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe or any valve section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. Leakage shall not be measured by a drop in pressure in a test section over a period of time.
 - b. No pipe installation will be accepted if the leakage is greater than that determined by the following formula in which "L" is the allowable leakage in gallons per hour; "S" is the length of pipe tested in feet; "P" is the average test pressure during the leakage test in pounds per square inch (gauge); and "D" as the nominal diameter of the pipe in inches.

$$L = \frac{SD \cdot P^{1/2}}{133,200}$$

5. Repair of Leaks - If the test discloses leakage greater than the allowable leakage the CONTRACTOR shall, at his own expense, locate and repair the defective joints until leakage is within the specified allowable. The CONTRACTOR shall repair any specific leaks regardless of the test results if, in the opinion of the ENGINEER, they are serious enough to endanger the future serviceability of the pipeline.
- C. All materials found to be defective during testing shall be replaced with new and approved material at no additional expense to the OWNER.

3.10 DISINFECTION OF POTABLE WATER LINES

A. General:

1. Flushing and disinfections of potable waterlines shall be done in accordance with the procedure set forth in AWWA C651 - Disinfecting Water Mains, latest edition, and shall be witnessed by the ENGINEER unless otherwise approved. The CONTRACTOR shall provide all temporary blowoffs, pumps, chlorination equipment, chlorine and all other necessary apparatus required. The OWNER will supply water to the CONTRACTOR for disinfection purposes at no expense to the CONTRACTOR.
2. All valves on the new piping shall be operated during the disinfection procedure in order to ensure complete disinfections.
3. The form of chlorine proposed by the CONTRACTOR for disinfection shall be approved by the ENGINEER.
4. The CONTRACTOR shall take adequate measures to prevent backflow of flushing water and chlorinated water into the existing water distribution system.
5. CONTRACTOR shall not make physical connection to the existing water main prior to satisfactory results of chlorination. An approved backflow prevention device shall be utilized to transfer water from the existing system to the new piping network.

B. Pipe Cleaning:

1. If the pipe contains dirt or heavy encrusted matter that, in the opinion of the ENGINEER, will not be removed during the flushing operation, the CONTRACTOR shall clean and swab the interior of the pipe with a one (1) percent hypochlorite disinfecting solution.
2. The pipeline shall be flushed to remove all remaining foreign material prior to disinfections, except when the tablet method is used. The flushing operation shall develop a minimum velocity of 3.0 ft/sec. It will be the CONTRACTOR's responsibility to properly size and locate corporations within test sections to adequately flush all piping at least 2 times its volume at the desired velocity.
3. Main line valves shall not be utilized to fill, flush, test or chlorinate water mains unless authorized and supervised by the ENGINEER.

C. Chlorine Application:

1. In general, chlorine shall be applied using the continuous feed method, as specified in AWWA C651.
2. Introduce water into the line at a constant rate while adding chlorine to the water at a constant rate, such that the water will have not less than 25 mg/L free chlorine. Maintain the chlorinated water in the pipeline for a minimum of 24 hours, after which period the treated water shall have a free chlorine residual of not less than 10 mg/L throughout the entire length. Repeat the above procedure if the residual, at the end of the 24 hours, fails to meet the minimum concentration. Chlorinated water, above the normal system prevailing concentration, shall not be allowed to remain in the pipeline for a period longer than 5 days.
3. Fire hydrants may not be used for sampling points but may be utilized as a feed source if properly flushed and the OWNER's required temporary piping system installed.

D. Final Flushing:

1. After the required retention period, flush all heavily chlorinated water from the main until the chlorine concentration is no higher than that prevailing in the system or is acceptable for domestic use. The CONTRACTOR shall be responsible for satisfactory disposal of all flushing water and chlorinated water at no additional expense to the OWNER.
2. Prior to discharging, a reducing agent shall be applied to the water to be wasted, to neutralize thoroughly the chlorine residual remaining in the water. (See Appendix B of AWWA C651 for neutralizing chemicals.)

E. Analytical Tests:

1. After completion of the final flushing and prior to placing the pipeline in service, two (2) consecutive sets of acceptable samples taken at least 24 hours apart shall be collected. Each sample shall be analyzed for total coliforms and heterotrophic plate count (HPC). All samples shall be collected by a qualified individual and will be witnessed by the ENGINEER, who will be given the opportunity to split all samples in accordance with the applicable AWWA current standards.
2. All samples shall be collected in laboratory-provided glassware with appropriate preservatives. The laboratory used for testing shall be certified in the Commonwealth of Massachusetts.
3. Sampling locations shall be subject to approval by ENGINEER and MassDEP.
4. The results of the sampling and analysis shall be reported to OWNER and ENGINEER.

F. Repetition of Procedure - If the original disinfection fails to produce satisfactory bacteriological samples, repeat the disinfection procedure until satisfactory results are obtained at no additional expense to the OWNER.

3.11 TEST REPORTS AND CERTIFICATES

- A. In addition to other requirements specified herein, the CONTRACTOR shall furnish to the OWNER notarized test reports and methods of test by an approved independent testing laboratory to show compliance of all materials furnished under this Section of the Specifications with all the requirements herein.
- B. Each shipment of pipe, tapping sleeves, valves, and appurtenances shall be accompanied by the manufacturer's notarized certificate of conformance certifying that materials to be furnished under these items meet all requirements herein.
- C. All testing of materials furnished under this Section of the Specifications shall be provided by the CONTRACTOR at no additional expense to the OWNER.

END OF SECTION

SECTION 33 20 00

WATER SERVICE CONNECTIONS

PART 1 – GENERAL

1.01 SUMMARY

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

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in all Divisions of these Specifications.
 - 1. Section 31 00 00 Earthwork
 - 2. Section 33 10 00 Water Distribution Piping
 - 3. Section 22 00 00 Plumbing

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Division 01 General Requirements.
 - 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.

1.04 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

1.05 QUALITY ASSURANCE

- A. Codes and Standards
 - 1. Plumbing Code Compliance: Comply with applicable portions of National Standard Plumbing Code pertaining to selection and installation of potable water system materials and products.
 - 2. Water Purveyor Compliance: Comply with requirements of Purveyor supplying water to project, obtain required permits and inspections.

B. Compliance

1. The OWNER may require an affidavit from the manufacturer or vendor that the products furnished comply with all applicable provisions of AWWA C800 and ASTM B-88.

1.06 COMPLIANCE WITH REDUCTION OF LEAD IN DRINKING WATER ACT AND SECTION 1417 OF THE SAFE DRINKING WATER ACT (SDWA)

- A. All pipes, pipe fittings, plumbing fittings, corporations, curb boxes, and fixtures must meet the requirements of the 2011 Reduction of Lead in Drinking Water Act and amendments to SDWA Section 1417 for potable water use.
- B. Certification of compliance shall be provided for all applicable materials herein.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All materials shall be of domestic manufacture.
- B. The OWNER has standardized on the following products listed in this Section for service connections.

2.02 SERVICE TUBING

- A. Polyethylene Water Tubing
 1. Provide Copper Tube Size (CTS) Polyethylene with a working pressure rating of 200psi.
 2. Tubing shall conform to AWWA C901, ASTM D3350 and ASTM D2737
 3. Connections to be cold flared, unions or couplings not acceptable
 4. Shall be NSF certified, meeting C901-96 standard
- B. 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. Seamless
 5. Shall be NSF certified, meeting C901-96 standard

2.03 CORPORATION STOPS

- A. Corporation Stop: Shall be as manufactured by Mueller or an approved equal.
 - 1. Test Pressure: 175 psi
 - 2. Full keyway and rigid liners
 - 3. Compression ends
 - 4. Size: As required by the service tubing
 - 5. Comply with AWWA C800, Underground Service Line Valves and Fittings.

2.04 CURB STOPS

- A. Shall be as manufactured by Mueller or an approved equal.
 - 1. Stops shall open RIGHT
 - 2. Full key with rigid liners
 - 3. Compression ends

2.05 CURB BOXES

- A. Curb boxes shall be of domestic manufacture by Ford, Hayes, or Mueller.
 - 1. Buffalo type, 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 1-inch.

2.06 SERVICE SADDLE

- A. Service saddle shall be of domestic manufacture as manufactured by Mueller or equal.
 - 1. Rated for 200 psi working pressure
 - 2. Double strap design
 - 3. O-ring sealed outlet
 - 4. Epoxy coated ductile iron body
 - 5. AWWA threads with Buna-N rubber gasket

6. Meet all applicable parts of ANSI/AWWA C800

2.07 PIPE INSULATION (Field Applied)

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

EXECUTION

3.01 INSPECTION

- A. Service tubing which does not conform to the requirements of this specification shall be immediately removed from the site by the CONTRACTOR.
- B. For interior plumbing see Section 22 00 00 – Plumbing.

3.02 HANDLING PIPE

- A. The CONTRACTOR shall take care not to damage pipe by impact, bending, compression, or abrasion during handling, and installation. Joint ends of pipe, especially, shall be kept clean.

3.03 SERVICE LOCATIONS AND SHUT-DOWNS

- A. All new service locations shown on the Contract Drawings shall be subject to field location approval by the ENGINEER and/or OWNER.
- B. Where a water service must be shut-down, it shall be the CONTRACTOR's responsibility to contact the party owning the service at least 48 hours in advance to arrange a shut-down schedule prior to doing any work.
 1. All such schedules must be approved prior to shut-down.
 2. Shut-down time shall be kept to a minimum so as to keep service off for the shortest possible time.

3.04 INSULATION OF TUBING

- A. Service Tubing.
 1. Where directed by the ENGINEER, the CONTRACTOR shall install new 1- inch services.

2. For services outside the paved areas, trench excavation shall be utilized, with tubing being carefully laid in the bottom of the trench, backfill placed and compaction completed.
 - a. Care shall be taken to insure against kinks or crushed areas.
3. Backfill around and to one (1) foot over the tubing shall not contain stones greater than one (1) inch in diameter.
4. For services to be installed beneath paved surfaces either trenchless or open trench methods may be used.
5. Service tubing between the corporation stop and the curb stop shall be one (1) piece.
6. Service tubing between the curb stop and the property line shall be one (1) piece.
7. Tubing shall be connected to the curb stop and compression joints tightened.
8. Wrap tubing with #12 tracer wire connected to the corporation and curb stop.
9. Duct tape shall be installed over the outlet end of curb stops, to be left for future connections.

3.05 APPURTENANCES

A. Corporation Stops

1. Provide the necessary tap, sized for the fitting.

B. Curb Stops and Boxes

1. Install curb stops where shown on the Drawings.
2. Place valve box over stop, taking care that it is installed plumb.
3. Curb stops shall be key checked after adjustment of curb box to final grade.
 - a. If curb stop is not centered in the box the box shall be removed and reset over the curb stop.

END OF SECTION

SECTION 33 34 00

SANITARY SEWER FORCE MAINS

PART 1 – GENERAL

1.01 SUMMARY

Work included: Provide Sanitary sewer force mains, fittings, accessories, services, and bedding.

1.02 RELATED SECTIONS

- A. Section 31 00 00 – Earthwork
- B. Section 31 23 19 – Dewatering and Drainage

1.03 REFERENCES

- A. All work specified in this Section shall conform to the Town of Manchester-By- The-Sea standards.

1.04 SUBMITTALS

- A. Product Data and Shop Drawings: For each type of product indicated. Submitted and approved by the ENGINEER and the Town of Manchester-By-The-Sea.
- B. Field quality-control test reports: The CONTRACTOR shall notify and subsequently provide the test reports to the OWNER upon completion of the pressure testing. Pressure testing shall be observed by the ENGINEER.
- C. Operation and Maintenance Data: For water valves and specialties to include in emergency, operation, and maintenance manuals.
- D. A copy of any permits required by local authorities having jurisdiction shall be submitted to the OWNER prior to commencing work on the water system.
- E. Certificate of Compliance:
 - 1. Each shipment of piping, valves, or appurtenances shall be accompanied with the manufacturer's notarized certificate certifying conformance with the requirements of the Specifications.

1.05 PERMIT

- A. The CONTRACTOR shall setup a Preconstruction Meeting with the OWNER to finalize approval of layout and details prior to commencing work.
- B. The CONTRACTOR shall obtain all permits required to perform work on the sewer system without expense to the OWNER.

1.06 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with applicable requirements of the OWNER including requirements pertaining to the tapping of sewer mains and backflow prevention.
2. Comply with applicable OWNER'S standards for force main piping, and connection to existing structures, including materials, installation, and testing.
3. Comply with MassDEP requirements for sewer collection systems.

B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

C. All sewer pipe and appurtenances shall be "American Made;" certificates of compliance shall be provided by manufacturer and provided to the Town.

1.07 DELIVERY, STORAGE, AND HANDLING

A. All delivery, storage, and handling of pipe, valves, and appurtenances shall be in accordance with manufacturer's recommendations.

B. During Storage: Use precautions for products, according to the following:

1. Do not remove protections unless necessary for inspection; then reinstall for storage.
2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Handling: Use sling to handle valves if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points. Do not lift valves with bear metal chains.

D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

E. Protect stored piping from moisture and dirt. Elevate above grade.

F. Protect flanges, fittings, and specialties from moisture and dirt. Piping or materials damaged during delivery storage or handling shall be replaced at the expense of the CONTRACTOR.

1.08 PROJECT CONDITIONS

A. Provide underground water distribution piping as outlined in this section and as demonstrated on the Drawings.

1.09 COORDINATION

- A. Coordinate connection to existing sewer system with the Town of Manchester-By- The-Sea DPW.
- B. The CONTRACTOR shall contact “Dig Safe” at 1-888-Dig-Safe to verify locations of existing underground utilities in areas of proposed excavation prior to commencing any excavation effort.
- C. The CONTRACTOR shall coordinate any work on the sewer system with the Town of Manchester-By-The-Sea prior to commencing any work on the existing and proposed sewer system.

1.010 MARKING

- A. Marking of all pipe shall conform to the requirements of AWWA and ANSI.

1.011 MANUFACTURER’S REPRESENTATIVE

- A. The CONTRACTOR shall furnish at no additional expense to the OWNER, the services of pipe manufacturer’s representatives for instruction of the CONTRACTOR’s personnel who will be installing the pipe. The instruction shall include proper handling, installation, and jointing and other construction areas, and shall be for such lengths of time required to fully familiarize the CONTRACTOR’s personnel with the proper techniques.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All sewer appurtenances are to be American made.
- B. All materials shall be reviewed and approved prior to installation by the ENGINEER.

2.02 DUCTILE IRON PIPE

- G. Type: Class 52 DI pipe in accordance with AWWA C150/A21.50 and C151/A21.51 with factory applied bituminous coatings in accordance with AWWA/ANSI C151, double cement lined in accordance with AWWA/ANSI C104/A21.4, push-on joint or mechanical joint type, unless otherwise specified on Drawings.
- H. Supply pipe in 18 to 20-foot lengths and permanently mark with manufacturer, date of manufacture, size, type, class/wall thickness, and standard produced to.
- I. Mechanical joint: AWWA/ANSI C111/A21.
- J. Restrained joints: AWWA M41.
- K. Design accessories for complete piping system: AWWA/ANSI C111/A21.11.
- L. Restrained gland gaskets: per manufacturers’ recommendations for maximum pressures in pipe.

2.03 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

- A. Pipe: ASTM D-2241, pipe 14" to 48" in diameter must conform to AWWA C905 with cast iron pipe equivalent outside diameters, class 165 (DR 25). Pipe 4" to 12" in diameter must conform to AWWA C900, with cast iron pipe equivalent outside diameters, Class 150 (DR 18). Pipe smaller than 4" in diameter must conform to ASTM D1784, D2241, and F477. PVC force main shall be green.
- B. Joints: Join by means of a push on bell joint which is to be an integral part of the barrel in conformance with AWWA C900. Provide gasket composition suitable for exposure to sanitary sewage.
- C. Fittings: For pipe less than 4" in diameter, PVC fittings to conform to the material requirements for PVC pipe described herein. For pipe 4" to 8" in diameter, use PVC molded fittings with restraint joints. Provide gasket composition suitable for exposure to sanitary sewage.
- D. Pipe to bear the National Sanitation Foundation seal of approval. Comply with the requirements of Type I, Grade I of the ASTM resin specification D-1784. Certificates of conformance with the foregoing specifications to be furnished with each lot of pipe supplied.

2.04 AIR RELEASE VALVES AND MANHOLES

- A. A.R.I. Flow Control Accessories SAAR short version D-025 P Duel ARV or approved equal, see Inlet size 2" NPT, with backwash accessories or size called out/approved on construction plans. Air release valves shall be ARI Model No. D-025 or equivalent. Size and location shall be as indicated on the drawings based on pumping flow rates and manufacturer's recommendations. ARI Model No. D-26 may be required based on flow rates. Design engineer to verify with manufacturer appropriate number and location of all ARVs installed online and on pump station header piping as additional ARVs may be necessary for optimum pump performance.
- B. For ARV installations, provide precast manhole with cover and frame as specified. Tracer wire box shall be located within 3' of ARV MH. No above grade ARV installations allowed.

2.05 PIPE ACCESSORIES

- A. Pipe Joint Couplings: All joining of pipe for new construction shall be bell and spigot connections or gasketed fully molded fittings. For Fusible PVC, bell and spigot connections are authorized as well as mechanical joint (MJ) fittings. For HDPE connections, only butt fusion, electro-fused couplings, or butt fused MJ adaptors shall be used. No full circle repair clamps/bands shall be used to permanently join any sanitary sewer force main regardless of pipe material. Use of other repair sleeves, clamps, couplings must be approved by the Engineer prior to installation.
- B. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tees, bends, elbows, reducers and other configurations.
- C. Locator Tape: Magnetic detectable conductor, clear brightly colored plastic covering; imprinting to read CAUTION - BURIED SEWER LINE BELOW, or other similar wording approved by the Engineer, in large capital letters. Tape must be minimum 6" wide.
- C. Copper Tracer Wire: Place continuous 12-gauge insulated solid copper tracer wire over all sanitary sewer force mains. Insulation color shall be green.

2.06 Tapping Sleeves And Saddles

- A. Saddles: Ford Model H-10488 or Rockwell #313 Double strap saddles with epoxy coating and 304 Stainless Steel Straps and Nuts suitable for 200 psi working pressure, or approved equal.
- B. Sleeves: Cast iron Split sleeves with both end seals and side seals are required for all taps of same size as run. Rockwell Model 622- XXXXXXXXX-031 - Fabricated Steel Sleeves with Epoxy Coating and 304 Stainless Steel Bolts and nuts will be acceptable for all reducing size taps. All Sleeves shall be suitable for 150 psi working pressure. Valves shall be supplied to integrally fit to the sleeve and provide connection to the existing water main without any interruption of service.

2.07 VALVES

- A. Gate Valves
 - a. End connections as required for the piping in which they are installed.
 - b. Suitable For working pressure of not less than 150 psi.
 - c. Open by turning counter counter-clockwise.
 - d. Provide stem extensions, if required, to bring operating nut to within two feet of finished grade.

Two inch and smaller:

- a. Use all bronze, screw ends, double disc, or wedge disc, rising stem.
- b. "T" head operator for buried service, handwheel operator for exposed locations.

Three-inch and larger:

- a. Use double disc complying with ANSI/AWWA C500.
- b. Buried service: Non rising stem with two-inch metal operating nut with arrow indicating direction of opening.
- c. Exposed: Outside screw and yoke with handwheel operator.
- d. Provide bypass valve where required for pressure and valve size.

- B. Plug Valves

- a. Provide non-lubricated, eccentric type plug valves having resilient faced plugs, complying with AWWA Standard C504 and other requirements specified herein.
- b. Furnish screwed, flanged, or mechanical joint end connections as indicated on the Drawings.
- c. Provide valves of bolted bonnet design:

Valves 4" and larger to be designed to allow repacking without removing the bonnet and the packing shall be adjustable.

Packing to be replaceable with the valve under pressure with valve open or closed with pressure on either side of the plug.

- d. Provide valves capable of drip-tight shutoff up to full rating 175 psi for 4" through 12", 150 psi for 14" through 36", and with pressure in either direction. Pressure ratings shall be 125 psi for 42" and larger.

- e. Valve bodies shall be cast iron complying with ASTM A126, Class B and AWWA Standard C-504-80, Section 5.4.
- f. All exposed nuts, bolts, springs, etc. shall be stainless steel on all valves.

2.08 Valve Boxes:

- A Each valve buried in the ground shall be provided with an approved valve box and cover. The boxes shall be adjustable screw type made of close grained gray cast iron, in three pieces, comprising of the lower base piece which shall fit around the stuffing box gland and rest on the valve bonnet, the upper part which shall screw onto the lower part and have a socket to receive the cover. The cover shall have the word "SEWER" cast on the upper surface in raised letters. All castings shall be thoroughly cleaned and heavily coated with asphalt or coal-tar varnish.
- B Each valve box shall be fitted with an extension stem for use with the buried service non-rising stem valves. The stem shall be of metal and used to extend the position of the 2" operating nut to within 4 feet of grade. Each stem shall be fitted with a self-centering disk below the operating nut to keep the stem aligned in the valve box and minimize the amount of grit that can enter the valve box.

2.10 EMBEDMENT MATERIALS

- A. General: Embedment and foundation materials listed herein
- B. Aggregate Bedding and Foundation Stone: ASTM C33. Class I - Angular, 6 to 40-mm (1/4 to 1 1/2-in.) graded stone, Bedding shall be inert in that it shall not deteriorate over time due to chemical contact or electrolysis. Sanitary Sewer force mains and effluent lines must be bedded/haunched with Class 1 material up to spring line at a minimum. Larger diameter pipe may require additional bedding/foundation stone as called out/approved on plans or recommended by pipe manufacturer.

Initial Backfill Over Pipe:

- 1. Class II - Coarse sands and gravels with maximum particle size of 40 mm (1 1/2 in.), including variously graded sands and gravels containing a small percentage of fines, generally granular and non-cohesive, either wet or dry. Soil types GW, GP, SW, and SP are included in this class.
- 2. Class III - Fine sand and clayey gravels, including fine sands, sand-clay mixtures, and gravel-clay mixtures. Soil types GM and SM are included in this class.

Unsuitable Materials: These materials are not recommended for bedding, haunching, or initial backfill:

- 1. Class IV - Silt, silty clays, and clays, including inorganic clays and silts of medium to high plasticity and liquid limits. Soil Types MH, ML, CH, and CL are included in this class.
- 2. Class V - This class includes the organic soils OL, OH, and PT as well as soils containing frozen earth, debris, rocks larger than 40 mm (1 1/2 in.) in diameter, and other foreign materials.

PART 3 EXECUTION

3.01 PREPARATION

- A. Excavate pipe trench in accordance with ASTM D2321 for work of this section. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Remove large stones or other hard matter that could damage pipe or impede consistent backfilling or compaction.
- C. Trench width not to exceed that necessary for joining the pipe and placing and compacting the initial backfill. Compaction of the initial backfill to extent of trench wall.
- D. Stabilize poor or running soil conditions. Select and utilize a suitable method of trench wall and trench bottom stabilization. Methods to be approved by the Engineer.
- E. Correct over excavation with foundation stone.

3.02 EXAMINATION

- A. Verify that trench cut, and excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on the Drawings.

3.03 BEDDING

- A. Hand trim excavations to required elevations.
- B. Place bedding material at trench bottom, level materials in continuous layers not exceeding 8 inches compacted depth (95 percent compaction of modified proctor).
- C. Maintain moisture content of bedding material at optimum or above to attain required compaction density.

3.04 INSTALLATION - PIPE

- A. Install pipe, fittings, and accessories in accordance with ASTM D2321 and manufacturer's instructions. Internal epoxy coated DIP force main, fittings, and accessories to be installed in accordance with AWWA C-600. Seal joints watertight.
- B. Lay pipe in an upstream direction to the appropriate line and slope gradients noted on profile drawings.
- C. Refer to ASTM D2321 for additional trenching and backfill requirements. Do not displace or damage pipe when compacting.
- D. All sewers shall be constructed with a minimum of five (5) feet of cover, unless approved by the Engineer and Town.

- E. Sewer Line Relationship to Water Mains and Storm Drainage: In accordance with Commonwealth of Massachusetts.
1. Force mains crossing potable water mains shall be laid to provide a minimum vertical separation of 18 inches between the outside of the potable water main and the outside of the sewer. The potable water main shall be above the sewer. Where a new sewer line crosses a new potable water main, a full length of pipe shall be used for both the sewer line and potable water main and the crossing shall be arranged so that the joints of each line shall be as far as possible from the point of crossing and each other. Where a potable water main crosses under a sewer, adequate structural support shall be provided for the sewer line to prevent damage to the potable water main while maintaining line and grade. The crossing shall be encased in concrete.
 3. When crossing over/under piped storm drainage, provide minimum vertical separation of 18."
- F. Tracer Wire: Install a continuous 12 gauge insulated tracing wire along all pressure pipelines. The wire shall be secured to the pipeline at 10' intervals. Access to the wire shall be provided at the pump station, air relief/vacuum breaker valves, and terminating manhole. Color of wire insulation shall be green. Maximum tracing wire length shall be 1000' without terminating in a valve box or intermediate detector site (Dummy Valve Box). Intermediate detector sites shall not be in pavement areas. Place precast circular concrete collar over riser cap. Splices shall be kept to a minimum, but if required, shall be made with an underground connector rated for direct burial service. Should the type of pipe material transition to iron pipe, the tracing wire shall continue over material change and be terminated at an intermediate detector site or at next in-line valve box. Force mains that are installed by a trenchless method (i.e. directional drill), four #14 wires shall be installed with the pipe and connected to the tracer wire at both ends or cad welded to the existing iron pipe at both ends. Prior to scheduling a final inspection with Town, the Contractor shall demonstrate that the locator wire functions properly by providing Town with a certificate of continuity test from a third party.
- G. Force Main Manifolds: When necessary to manifold a FM to an existing FM the following criteria must be met in addition to approved design engineer's recommendations.
1. Connection to existing FM must be with P-401 coated DIP wyes/sleeve/bends or approved equal coating. Coordinate with Town for scheduled shutdown of appropriate lift stations at least 72 hours prior to scheduled tie-in. Should hold times not be enough to complete manifold work, contractor must have a bypass plan approved prior to work. Contractor responsible for installing additional line restraints where needed on existing line when making a manifold tie-in for FM.
 2. 100% fully ported plug valve must be installed beyond wye connection on the new leg of force main and valve box installed to grade.
 3. Tracer wire must be brought to grade out of valve box used for plug valve.
 4. Any deviations to this connection type shall be specified on plans and approved by Town prior to any connection.
 5. It must be determined by the Engineer of Record if there are differential pressures that would require a check valve as part of the manifold tie-in and approved by Town.
- G. Force Main Hydrostatic Testing and final acceptance:

- A. Pressure test all sections of the force main and appurtenances subject to internal pressure in accordance with AWWA C600 (DIP) or AWWA C605 (PVC). Pump station above grade flanged header piping and below grade flanged piping shall be tested/recorded separately as determined by the Engineer of Record (EOR) and witnessed by both EOR and BCWS representative. Ensure all plug valves, check valves and flow meters where applicable are tested at safe operating pressures during pipe testing.
- B. Provide temporary blocking, bulkheads, flanges and plugs as necessary to assure all new pipes, valves and appurtenances will be pressure tested.
- C. Before applying test pressure, completely expel air from the force mains and all appurtenances. Utilize air release valves, as shown on the Drawings, to expel air as line is filled with water.
- D. Fill pipeline slowly with water from the BCWS system. Contractor is responsible coordinating with utility owner for access to use other water sources. Utilize an accurate water meter and pump arrangement to pump the line to the specified test pressure.
- E. Measure test pressure at the lowest point in the test segment. Maintain test pressure for a minimum of two hours. Provide a test pressure of 150 psi or 1.5 times the working pressure in the finished force main, whichever is greater.
- F. Do not allow a variance in the test pressure of more than 5 psi for the test duration. If the pressure drops more than 5 psi at any time during the test period, line fails and test must restart. If pressure drops below 150psi at any time during testing, line fails and test must restart. Provide an accurate pressure gauge, four inches in diameter, with a range of pressure large enough to allow the specific test pressure to fall in the middle of the range (i.e. for 150 psi test pressure need 300 psi range on gage). Face gradations shall be at 20 psi intervals with tick marks every one psi, or equal approved by BCWS. Failure to provide 1 psi increment gauge at time of testing will constitute failure of test until gauges are acquired, installed and ready for testing. If rescheduling of testing is needed, it will be dependent upon BCWS staff availability.
- G. Definition of Leakage: The quantity of water that is pumped and metered into the test section to maintain test pressure within 5 psi of the specified test pressure for the test duration, plus the quantity of water required to return line to test pressure at the end of the test.
- H. Test Results: Reject test section if the leakage exceeds the limits determined by the AWWA allowable leakage rate as stated in Section C605 and C600 as follows:

Ductile Iron PVC
 $L = SD(P)^{0.5}$ $L = ND(P)^{0.5}$
 148,000 8,223

For the ductile iron pipe equation, "L" is the allowable leakage in gallons per hour, "S" is the length of water main tested in feet, "D" is the nominal diameter of the water main in inches, and "P" is the test pressure in pounds per square inch (psi).

For the PVC pipe equation, "L" is the allowable leakage in gallons per hour, "N" is the number of joints in the length of water main tested, "D" is the nominal diameter of the water main in inches, and "P" is the test pressure in pounds per square inch (psi).

- I. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to the Owner.
- J. Locate and repair defective joints and/or pipes, and retest until the allowable test rates are within specified allowances.

3.05 THRUST RESTRAINT

- A. All sections of sanitary sewer force main is to be constructed of standard pipe and ductile iron fittings as specified in this Section. All associated plugs, caps, valves, tees, branches, and bends utilized in conjunction with PVC or DI force mains are to be restrained.
- C. Provide additional thrust restraint at any other points where, in the opinion of the Engineer, hydraulic thrust may develop.
- D. Ductile Iron Push-on Joint Pipe, Fittings, and Valves – U.S. Pipe FIELD LOK Gasket; American Cast Iron Pipe Company Fast-Grip□ Gasket; or equal as approved by Owner.
- E. Ductile Iron Mechanical Joint Pipe, Fittings, and Valves – Provide retainer glands (Megalug, Series 1100 manufactured by EBAA Iron, or equal approved by Owner) where required and/or shown on the Drawings. Retainer glands shall be installed in accordance with the manufacturer's recommendations.
- F. PVC Push-on Joint Pipe, Fittings, and Valves – EBAA Iron Sales, Inc Series 2000PV, Series 2800, Series 1600, Series 2500; or equal as approved by Owner.

3.06 INSTALLATION – AIR RELEASE VALVES AND MANHOLES

- A. Automatic air release valves shall be placed at high points in the sewer force main to prevent air locking. No above grade ARV pedestals allowed unless specifically approved by Owner.
- B. Install air release valves in precast flat top manholes with composite frames and covers. Install a tracer wire dummy valve box/intermediate detector site within 3 feet of ARV manhole.
- C. Install valves and manholes as shown on the Drawings or as directed by the Engineer. ARV manhole cover to be offset of ARV assembly where entry into the manhole is possible for maintenance and ARV blow off shall be pointed away from entry point. Shut off valve shall be oriented for ease of access from entry location. Clean valve interiors of all foreign matter before installation. Inspect valve in both opened and closed positions to ensure that all parts are in proper working condition.
- D. Provide thrust restraint as specified in paragraph 3.5 of this Section.
- E. Coat air release manholes and pipes inside air release manholes with approved Epoxy Coating at 40-50 mils Dry Film Thickness for Sherwin Williams Duraplate 6100 or 120 mils nominal thickness for Raven Epoxy 405. Entire manhole shall be coated below the frame. No portion of the ARV/valve assembly or frame and cover shall be epoxy coated.

3.07 INSTALLATION – PLUG VALVES

Install plug valves on force mains in lieu of gate valves. Plug valves shall be 100% port eccentric models. No exceptions.

3.08 PAVEMENT REPAIR AND REPLACEMENT

- A. Replace or repair all surface courses on roads and routes, sidewalks and driveways that are removed or damaged in the construction of this project. Repair or replace pavements in accordance with MassDOT Standard Specifications for Highway Construction.

- D. Maintain traffic on all roads and routes which must be crossed by sewer lines. If the open cut method is used, either (1) make two separate cuts to allow one lane open to traffic at all times, or (2) provide suitable detour.
- E. Place excavated material on the traffic side of the trench forming a barrier between vehicular traffic and the construction trench. Otherwise, utilize moveable barricades, which can be relocated as the work progresses.

3.09 PROTECTION OF FINISHED WORK

Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

3.10 TESTING

- A. Alignment Tests: Each section of pipe will be checked by the OWNER or the ENGINEER in order to determine whether any displacement of the pipe has occurred. The CONTRACTOR shall provide suitable assistance to the OWNER or the ENGINEER. The CONTRACTOR shall repair any poor alignment, displaced pipe or other defects discovered, as directed by the ENGINEER.
- B. Hydrostatic Tests: After the pipe has been laid and the trench has been backfilled, all newly laid pipe or any valve section thereof, shall be subjected to a pressure and leakage test in accordance with AWWA C600-latest edition and as approved by the ENGINEER. The CONTRACTOR shall provide all pumps, pipe, connections, gages, measuring devices, and all other apparatus necessary for the test and shall conduct the test in the presence of and to the satisfaction of the ENGINEER. The OWNER will supply water to the CONTRACTOR for testing purposes at no expense to the CONTRACTOR.
- C. All materials found to be defective during testing shall be replaced with new and approved material at no additional expense to the OWNER.

END OF SECTION

SECTION 33 42 11

STORM DRAIN UTILITY PIPING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. The work covered in this Section of the Specifications includes construction and placement of all storm drainage piping and connecting to drainage manholes and catch basins, and all appurtenant and incidental work, complete, in strict accordance with the Specifications and the applicable Drawings.
2. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby, made a part of this Section of the Specifications.

B. Related Sections

1. 31 00 00 Earthwork
2. 33 49 00 - Drainage Manholes and Catch Basin

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. All work specified in this Section shall conform to the standard requirements of the Town of Manchester and the Commonwealth of Massachusetts Standard Specifications for Highway and Bridges, latest revision, herein referred to as "State Standards" Specifically Section 200, 230, and 140.
- B. American Society for Testing and Materials Standards.
1. American Association of State Highway and Transportation Officials (AASHTO)
 - a. AASHTO M170 – Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
 - b. AASHTO M198 – Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets
 2. ASTM International (ASTM)
 - a. ASTM C76 – Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
 - b. ASTM C443 – Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
 - c. ASTM C1173 – Standard Specification for Flexible Transition Couplings for Underground Piping Systems
 - d. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications

- e. ASTM D2412 – Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- f. ASTM D3034 – Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- g. ASTM D3212 – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- h. ASTM D4101 – Standard Specification for Polypropylene Injection and Extrusion Materials
- i. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

- A. Submit in accordance with the Division 01 General Requirements

- B. Product Data

- 1. Manufacturer's data and a Certificate notarized by the manufacturer certifying compliance with the specifications.
 - 2. Manufacturer Instructions and recommendations for storage, protection, handling, and installation of the pipe, fittings, and appurtenances.

- C. Design Data

- 1. Pipe manufacturer's anti-floatation calculations for each pipe material and details, signed and stamped by a licensed Professional Engineer in the state where Project is located based on the following criteria.

- Criteria for calculations:

- Set groundwater elevation at grade above the pipe.
 - Factor of safety: 1.1. Downward forces from the weight of the pipe and soils over pipe: 1.1 times the buoyant uplift forces.
 - Consider pipe is empty. Do not consider the weight of internal water in calculations.

- D. Source and field quality control submittals

- 1. Pressure testing procedures
 - 2. Test results, inspection video on DVD, and logs from inspection and testing.

- E. Closeout and Maintenance Material Submittals per Division 01 General Requirements and as follows

- 1. Video recordings of post-construction inspections
 - 2. Record depths and take ties to locations for Conformed to Construction Record Drawings

- A. Pipe stub capped ends
- B. Locations of plugged pipes
- C. Manholes and catch basins.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials and equipment shall be progressively delivered at the site so that there will be neither delay in the progress of the work nor an accumulation of materials that is not to be used within a reasonable time. Materials shall be stored so as to assure the preservation of their quality and fitness for the work.

B. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located so as to facilitate their prompt inspection.

C. Store materials and equipment in accordance with the manufacturer's instructions.

D. Accompany each shipment of pipe, pipe fittings and appurtenances with manufacturers' certificates of compliance.

E. Private property shall not be used for storage purposes without written permission of the owner or lessee, and if requested by the Engineer copies of such written permission shall be furnished to him/her. All storage sites shall be restored to their original condition by the Contractor at his expense.

- 1. Avoid damage to castings from impact, abrasion, or corrosion during handling and storage.
- 2. Use all means necessary to protect pre-cast concrete units and materials before, during and after installation and to protect the installed work and materials for all other trades.
- 3. In case of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at the Contractor's expense.

PART 2 – MATERIALS

2.01 MATERIALS

A. General

- 1. Provide fittings of same type and class of materials as pipe with single piece gasket.
- 2. Minimum pipe stiffness at 5 percent deflection: 46 psi for all sizes when tested in accordance with ASTM D2412.
- 3. Joint deflection: accommodate an offset along pipe axis of minimum of 7 inches over 20 horizontal feet.
- 4. Provide anti-floatation system for each pipe material where required designed by pipe manufacturer.
- 5. Gasket lubricant: solution of vegetable soap or other solution supplied by pipe Manufacturer.

B. DRAIN PIPE LESS THAN 24 INCHES

1. PVC pipe, joints and fittings 1. 15-inch diameter and smaller: ASTM D3034.
2. Gaskets: in accordance with ASTM F477.
3. 18-inch diameter and larger: ASTM F679.
4. Joints: rubber gasketed bell and spigot type in accordance with ASTM D3212

C. DRAIN PIPE 24 INCHES TO 36 INCHES

1. Provide PVC or PP pipe in accordance with the following.
 - a. PVC pipe, joints and fittings: Per ASTM F679.
 - Joints: Rubber gasketed bell and spigot type per ASTM 3212.
 - Gaskets: ASTM F477.
 - b. PP Pipe
 - Acceptable level of quality: Equivalent to ADS N-12 HP Sanitary Pipe with water tight (WT) joint, or equal. Unless otherwise specified on Plans or herein, provide thermoplastic pipe and joint fittings as specified below.
 - Interior and exterior surface: Smooth with annular inner corrugations.
 - Pipe stiffness: Minimum of 46 psi when tested in accordance with ASTM D2412.
 - Material: Virgin per ASTM D4101.
 - Pipe joining: Gasketed integral bell & spigot with watertight joint
 - 1) Watertight joint: Per ASTM D3212.
 - 2) Spigots: With 2 gaskets per ASTM F477.
 - Gaskets: Installed by the pipe manufacturer and covered with a removable, protective wrap to keep free from debris.
 - Provide with manufacturer's joint lubricant for use on the gasket and bell during assembly.
 - 3) Bell: Reinforced bell with polymer composite band.
 - Provide that joint deflection accommodates an offset along pipe axis minimum of 7-inches over 20 horizontal feet.

D. DRAIN PIPE GREATER THAN 36 INCHES

1. Provide PP pipe for pipes greater than 36-inches.

E. FLEXIBLE COUPLINGS

1. Furnish ASTM 1173 flexible couplings for pipe to pipe connections.
2. Type A: non-pressure application, elastomeric sleeve or rubber sleeve incorporating stainless steel tension bands and tightening mechanism to provide positive seal against both infiltration and exfiltration. Stainless steel bands: 300 Series. Coupling: resilient and unaffected by soil conditions, resistant to chemicals, ultraviolet rays, and fungus growth.
3. Type C: PVC repair coupling of same type and class of materials as pipe Fitting: provided with single piece gasket.

F. UNDERGROUND MARKING TAPE

1. Furnish detectable marking tape with aluminum core, minimum 6 inches wide and minimum 5 mils thick with APWA uniform color-coding for quick and easy identification and location. Text or lettering: CAUTION BURIED DRAIN LINE BELOW repeated continuously along length of tape at maximum intervals of 3 feet.

G. SOURCE QUALITY CONTROL

1. Provide in accordance with Division 01 General Requirements

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine the substrate and conditions under which work of this Section is to be performed, and correct unsatisfactory conditions that would prevent proper and timely completion of the work. Do not proceed until satisfactory conditions have been corrected.

1. Examine pipe and joint products for, distortion or other defects. Check coating for smoothness and tenacity. Ensure pipes are clean and clear of debris prior to installation.

B. The installation of all pipes of various materials, structures, and connections to existing pipes/structures shall be made at the locations and elevations as shown on the drawings.

C. All materials and each part of detail of the work shall be subject to inspection by the Engineer. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the contractor as is required to make a complete and detailed inspection, (such assistance may include furnishing labor, tools, and equipment, at no expense to the Engineer.)

D. If the Engineer so requests, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering or the removing and the replacing of the covering or making good of the parts removed, will be at the Contractor's expense.

E. Any work done or materials used without authorization by the Engineer may be ordered removed and replaced at the Contractor's expense. The Contractor shall furnish written information to the Engineer stating the original sources of supply of all materials manufactured away from the actual site of the work. In order to ensure a proper time sequence for required inspection and approval this information shall be furnished at least two weeks in advance of the incorporation in the work of any such materials.

F. For the purpose of observing work that affects their respective properties, inspectors for the municipalities, public agencies and the utility companies shall be permitted access to the work, but all official orders and directives to the Contractor will be issued by the Engineer.

G. The inspection of the work shall not relieve the contractor of any of his obligations to fulfill the terms of the Contract as herein prescribed by the plans and specifications.

H. Failure to reject any defective work or materials shall not in any way prevent later rejection when such defect is discovered, nor obligate the Owner to make final acceptance.

I. The Contractor shall give prior notice to the Engineer when work on the various items is to be performed by him or his Subcontractors. If work is suspended on any item, prior notice shall be given to the Engineer before resumption of such work.

J. All storm drain lines shall be given combined pressure and leakage tests as detailed by the Town of Manchester.

3.02 GENERAL

A. Excavation and backfilling requirements for installation of piping utilities shall be in accordance with the requirements as specified in Section 31 00 00, Earthwork.

B. Install in accordance with manufacturer's recommendations. Secure each length of pipe with bedding before placing next length. Plug open ends whenever Work is suspended. Bed pipe as shown on Drawings. Place and compact enough backfill material between pipe and sides of trench to hold pipe in correct alignment when each pipe has been properly bedded.

C. Excavate bell and coupling holes or provide in base material to receive bell or coupling so only barrel of pipe receives bearing pressure from supporting material. Do not permanently support pipe or fittings on blocks, wedges, boards or stones. C. Prevent floatation of pipe from water in trenches.

D. Maintain flows during Work per Section 01 51 42.

E. Assist Engineer as needed to run level checks on pipe slopes, and take ties.

F. Lay pipe to line and grade shown on Drawings. Field verify elevations and slope and make adjustments as necessary. If grade is not shown, determine elevations of start and finish points for each run of pipe. Lay pipe to uniform grade between manholes. Line and grade may be adjusted by Engineer as required by field conditions. Lay each pipe to form a close joint with next adjoining pipe and bring inverts continuously to required line and grade.

G. Immediately lay pipe as soon as excavation is completed and bedding material is at proper grade

1. Insert circular rubber gasket in gasket seat provided and apply a thin film of gasket lubricant to inside surface of gasket
2. Clean spigot end of pipe and enter into rubber gasket in bell. Keep joint from contacting ground
3. Complete joint by forcing plain end to seat of bell. Mark pipes without depth mark before assembly to ensure spigot end is inserted to full depth of joint

H. Do not lay next length of pipe until previous length has had sufficient material tamped around it to secure it firmly in place and prevent movement or disturbance Lay pipe in the dry trench. Dewater trench pursuant to Section 01 57 05. Do not use installed pipe to remove water from Work area.

J. Lay pipe with bell ends facing direction of laying unless otherwise permitted by Engineer. Make joints according to pipe manufacturer recommendations

K. Flush pipes and remove debris by method approved by Engineer. Do not perform gravity flushing

L. Connections to manholes and catch basins: short length of pipe so joints are located within 3 feet of inside surface of manholes and catch basins

M. Use manufacturer recommended anti-floatation system for each pipe material

N. Flexible couplings

1. Use compression type flexible connector cast into manhole wall or flexible boot connection for pipe connections to new manholes, according to pipe manufacturer recommendations. Do not field core new manholes
2. Core existing manhole and install boot type flexible connector for pipe connections to existing manholes

O. PVC Pipe Installation

1. Store pipe bundles on flat surface to support barrels evenly to prevent warping. Do not use warped sections.
2. Keep pipe stacked in original shipping bundles and remove only quantity of pipe needed for 1 day of laying, and distribute along trench

3.03 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.
- B. Remove and replace damaged pipe, or encase in Class A concrete collar or envelope as directed.
- C. Perform digital video inspection of interior of pipe and catch basin lateral connections prior to final paving with experienced personnel trained in locating breaks, obstacles and service connections by closed circuit television. Submit a DVD and suitable log to Engineer for review prior to final paving.
- D. Perform deflection test for flexible pipe within 30 days of completion of PVC and PP pipe installation. Test 100 percent of pipe with a Go/No-Go mandrel. Size outside dimension of mandrel to permit maximum 7.5 percent deflection.

Base mandrel dimensions on base pipe ID

1. Mandrel O.D. = $((100-7.5)/100) \times \text{base pipe ID}$

3.04 CLEANING

- A. Clean and flush piping after Work is complete and before final acceptance.

3.05 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements

END OF SECTION